THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, LONDON [*ONE HUNDRED AND SEVENTY-SIX PAGES.*] TELEPHONE NUMBER—5356 GERRARD

No. XI. OF VOL. I., 1906. No. 4307. Vol. CLXX. LONDON, SATURDAY, MARCH 17, 1906. PRICE 7d.; POST FREE, 7½d. [Pp. 120+56.

8vo, pp. 240. 40 Illustrations. 6s. net.

SQUINT. By CLAUD WORTH.

NEW EDITION.

"This is an excellent work. ..... Eminently practical."—THE LANCET.

"This is a book of very exceptional value and importance. .. ... The fullest and most authoritative study of the subject that has hitherto been presented to the profession."—MEDICAL PRESS.

"Describes successful methods of dealing with a class of cases the treatment of which has hitherto been very unsatisfactory."—BRITISH MEDICAL JOURNAL.

London: Bale, Sons, and Danielsson, 83-89, Gt. Titchfield-st., W.

PRACTICAL PRIVATE and PERSONAL INSTRUCTION in SUBJECTIVE SIGHT TESTING free to Medical Men by Mr. F. DAVIDSON, at his rooms, 140, Great Portland-street, London, W. Communication invited. Study and Practice of Retinoscopy, with a Model Eye, by Mr. Percy Dunn. Price, including Model Eye, 17 Discs showing typical conditions of the Retina, and various lenses for Retinoscopic Practice, £1 5s. "Sight Testing for the General Practitioner," by F. Davidson, price 2s. 6d.

Direct Illumination of the Eye made easy by means of simple Electrical Appliance, complete with cord and battery, 30s.

F. Davidson & Co., 140, Great Portland-street, London, W.

THE REST CURE. (In preparation.)

HEADACHE. Price 12s. 6d.

FLUSHING and MORBID BLUSHING. 10s. 6d.

By HARRY CAMPBELL, M.D., F.R.C.P., Physician, North-West London Hospital, and to the Welbeck street Hospital for Diseases of the Nervous System.

Published by H. K. Lewis, 136, Gower-street, W.C.

BY W. McADAM ECCLES, M.S., F.R.C.S.

Just published. Price 7s. 6d. net.

THE IMPERFECTLY DESCENDED TESTIS: its Anatomy, Physiology, and Pathology. Illustrated by 41 Plates, 76 Figures.

Second Edition. 54 Plates and 63 Illustrations. Price 7s. 6d. net.

HERNIA: its Etiology, Symptoms, and Treatment.

London: Baillière, Tindall, & Cox, 8, Henrietta-street, Covent Garden.

Price 2s. 6d. net.

BURSATI. By ALFRED LINGARD, M.B., M.S.,

Imperial Bacteriologist to the Government of India.

Fasciculus I.; with numerous Illustrations.

Adlard & Son, Bartholomew Close, E.C.

New and Enlarged Edition. Demy 8vo, 2s

ESSAYS on HYSTERECTOMY.

BY

J. BLAND-SUTTON, F.R.C.S.

London: Adlard & Son, Bartholomew Close, E.C.

JUST PUBLISHED. Second Edition. Pp. 88, with 28 Photographs of the Schott Exercises and 28 other Figures. Price 3s. 6d. net.

THE ADMINISTRATION OF THE

NAUHEIM TREATMENT of HEART DISEASE in ENGLAND.

By LESLIE THORNE THORNE, M.D., B.S., Assistant Medical Examiner (Education) to the London County Council.

London: Baillière, Tindall, & Cox, 8, Henrietta street, Covent Garden.

Just out, pp. 164, with 32 Illustrations, price 5s. net.

EXAMINATION of the THROAT, NOSE, and EAR.

By WM. LAMB, M.D., M.R.C.P. Lond.,

Hon. Surgeon to the Birmingham Ear and Throat Hospital.

London: Baillière, Tindall, & Cox, 8, Henrietta-street, Covent Garden.

Pp. viii. + 90. With 9 Plates, plain and coloured. Price 5s. net.

NODAL FEVER (Febris Nodosa). By A. AUSTIN LENDON, M.D. Lond., M.R.C.S. Eng., Lecturer on Obstetrics and Clinical Lecturer on Diseases of Children, formerly Lecturer on Forensic Medicine in the University of Adelaide; Visiting Medical Officer, Children's Hospital, Adelaide.

Baillière, Tindall, & Cox, 8, Henrietta-street, Covent Garden, London.

DELICATE CHILDREN: their Care and MANAGEMENT.

By Dr. PERCY G. LEWIS,

Hon. Medical Officer, Victoria Hospital, Folkestone.

Price 3s. 6d.

Cassell & Company, Limited, La Belle Sauvage, London, E.C.

Demy 8vo, sewed, 1s. 6d. net.

THE PATHOLOGY and TREATMENT of RHEUMATOID ARTHRITIS. By P. W. LATHAM, M.D., Fellow and late Senior Censor of the Royal College of Physicians of London; Downing Professor of Medicine, Cambridge, 1874–1894; Consulting Physician to Addenbrooke's Hospital, Cambridge; and formerly Assistant Physician to the Westminster Hospital.

Cambridge: Deighton Bell & Co. London: George Bell & Sons.

Second Edition, with 472 Illustrations. Price 10s. 6d. net.

MANUAL of OPERATIVE SURGERY. By H. J. WARING, M.S., B.Sc. Lond., F.R.C.S., Assistant Surgeon to, and Lecturer on Surgical Anatomy at, St. Bartholomew's Hospital; Surgeon to the Metropolitan Hospital.

Young J. Pentland.

Edinburgh: Teviot-place. London: 38, West Smithfield, E.C.

Now ready, crown 8vo, cloth, pp. xx.–570, with 223 Illustrations, mostly from Original Drawings, price 10s. 6d. net.

MANUAL of PRACTICAL OPHTHALMOLOGY. By GEORGE A. BERRY, M.B., F.R.C.S. Ed., Senior Ophthalmic Surgeon, Edinburgh Royal Infirmary; Surgeon, Edinburgh Eye Dispensary; Lecturer on Ophthalmology, University of Edinburgh.

Young J. Pentland.

Edinburgh: Teviot-place. London: 38, West Smithfield, E.C.

ANDERS' PRACTICE OF MEDICINE.

SIX EDITIONS IN SIX YEARS.

See SAUNDERS' Advertisement on Page 5.

Second Edition. Pp. x. + 242, with 54 Plain and Coloured Figs. Price 6s. net.

HANDBOOK of DISEASES of the EAR. By RICHARD LAKE, F.R.C.S., Surgeon to the Royal Ear Hospital.

London: Baillière, Tindall, & Cox, 8, Henrietta-street, Covent Garden.

Now Ready. Price 7s. 6d. net. Demy 8vo, pp. x. + 152. 13 Plates, and other Illustrations. Cloth, limp.

THE SURGICAL TREATMENT of FACIAL NEURALGIA (with Especial Reference to Operations on the Gasserian Ganglion). By J. HUTCHINSON, Jun., F.R.C.S., Surgeon to the London Hospital.

"Mr. Hutchinson has made a complex and difficult subject exceedingly clear. His monograph is all it should be."—BRITISH MEDICAL JOURNAL.

"A careful and accurate account. ..... It is well written and maintains its interest throughout."—THE PRACTITIONER.

London: Bale, Sons & Danielsson, Ltd., 83–89, Great Titchfield-street, W.

THE RATIONAL TREATMENT of RUNNING EARS. By F. FAULDER WHITE, F.R.C.S., Hon. Surgeon and Aural Surgeon to the Coventry Hospital.

Some opinions of leading medical men:—

"Excellently practical." "A considerable addition to our knowledge." "I quite agree too much heroic drilling and gouging." "Interests me greatly." "Indicates that your views and treatment have done much good." 5s.

Iliffe & Sons, 20, Tudor-street, London.

Just Published. Pp. x. + 195, with 27 Illustrations. Price 5s. net.

DISEASES of the RECTUM, being a Short Account of the Commoner Diseases affecting the Ano-Rectal Region. By F. VICTOR MILWARD, M.B., B.C. Cantab., F.R.C.S. Eng.

Birmingham: Cornish Bros., Ltd., New Street.

RADIOGRAPHY: its Theory, Practice, and Applications. With Constructional and Manipulatory Details By S. BOTTONE. With 54 Illustrations. 3s. 6d. net.

Whittaker & Co., 2, White Hart-street, London, E.C.

587 pages, with 249 Illustrations. Royal 8vo. 15s. net.

LAWSON.—DISEASES of the EYES. Sixth Edition. Revised and Rewritten by ARNOLD LAWSON, F.R.C.S., Assist. Surg., Roy. Lond. Ophth. Hosp.

London: Smith, Elder & Co., 15, Waterloo place, S.W.

REFRACTION of the EYE.

KENNETH CAMPBELL, M.B., F.R.C.S.

5s. net.

Baillière, Tindall, & Cox, 8, Henrietta street, W.C.

Now Ready. Third Edition, Revised and Enlarged. Crown 8vo, cloth Price 6s. net, by post 6s. 4d.

THE RECOVERY of HEALTH. With a Chapter on the Salisbury Treatment and Recipes. By ARCHIBALD KEIGHTLEY, M.D. Cantab. With Illustrations.

London: Henry J. Glaisher, 57, Wigmore-street, W.

PRIVATE TUITION for the BLIND. Mr. J. H. WARMINGTON, M.A. (blind), Graduate of Cambridge University in mathematical honours, is prepared to receive BLIND BOYS as private pupils, and train them for the University or any other walk in life.—Apply, Mayfield, Downing-grove, Cambridge.

Vinolia

Good for Bath.
Lasts Longest.

The only Household soap without Rosin.

WHITE BAR.
3D

INTERNATIONAL MEDICAL CONGRESS AT LISBON.

APRIL 19TH TO 26TH, 1906.

SPECIALLY REDUCED 1st CLASS FARES

LONDON to LISBON.

SINGLE, £5 . 5 . 0. RETURN, £8 . 8 . 0.

Full Particulars from—

JOHN HALL Junr. & Co., 31 & 32, Crutched Friars, LONDON, E.C.

By Appointment to H.M. the King.

Cyllin

The Non-Toxic Bactericide.

The efficiency of Cyllin is guaranteed ten to thirty times that of Carbolic Acid, according to the organism against which it is employed.

1/- Bottle makes 25 Gallons—Efficiency Guaranteed.

Preparations of Cyllin—

Cyllin (medical)—A refined preparation for Medical and Surgical use.

Cyllin Capsules (palatinoids)—Recommended for Gastric or Intestinal Dyspepsia, &c.

Cyllin Inhalant—For use with Cyllin Inhalator in suppurative conditions of the bronchial passages, &c.

Cyllin Pastilles—Antiseptic Throat Lozenges: invaluable for purposes of mouth hygiene.

Cyllin Dusting Powder, Soap, Suppositories, Gauze, &c.

See Pamphlet entitled "STANDARD CHEMICAL DISINFECTANTS." Copies, together with Working Samples, sent gratis and postage paid on applying to

Jeyes' Sanitary Compounds Co., Ltd.,
64, Cannon Street, London, E.C.

The Erasmus Wilson Lectures

ON

THE DISTRIBUTION AND RECOVERY OF PERIPHERAL NERVES STUDIED FROM INSTANCES OF DIVISION IN MAN.

Delivered before the Royal College of Surgeons of England on March 12th, 14th, and 16th, 1906,

BY JAMES SHERREN, F.R.C.S. ENG.,

ASSISTANT SURGEON TO THE LONDON HOSPITAL; SURGEON TO THE POPLAR HOSPITAL FOR ACCIDENTS.

LECTURE I.

Delivered on March 12th.

MR. PRESIDENT AND GENTLEMEN,—Sir William Savory[1] in 1868, writing of the retention of sensibility after division of the musculo-spiral nerve, said: "The question is one which appears to be beyond the reach of dissection, and perhaps it will be best answered hereafter by observation and experiment in cases like the present one." 20 years later Weir Mitchell[2] emphasised the same fact: "The anatomists have somewhat misled us by their statements as to the innervation of fixed areas by certain nerves; whereas ..... it is to the clinical inquirer that anatomy must look for a knowledge of the surface areas of nerve distribution." I have approached the subject of the distribution of the peripheral nerves from the clinical standpoint as suggested by these authorities.

The material which I have used for these lectures is drawn from a personal study of 175 cases of nerve injury—many of them watched for a considerable time and several for more than three years. This investigation was carried out in conjunction with my friend and colleague Dr. Head, and I shall draw largely upon the conclusions at which we arrived. The cases we then investigated have been brought up to date and several new ones added. I would again thank those who alone made that work and these lectures possible, my colleagues at the London Hospital and at the Poplar Hospital, for the generous way in which they allowed us to use their cases.

That considerable difference of opinion exists with regard to the effect of division of a peripheral nerve upon sensation is evident from the following statements drawn from the writings of those who have studied the subject. Bowlby[3] in his book on "The Injuries and Diseases of Nerves" writes: "From my own observations I can have no doubt that in most cases of neurotomy a *complete anæsthesia* is certainly present and that there are all grades of gradually increasing sensation till we reach a point at which it becomes exceedingly difficult to say for certain that the tactile sense is not due to a regeneration of the divided nerve." Thorburn and Williamson state[4]: "Sensation of all kinds is abolished but is often partially restored by the agency of collateral branches. The margins of the anæsthesia are thus rarely quite sharply defined." Gowers and Taylor say[5]: "There may be no loss even when a nerve is completely divided." Turning now to continental writers, Tilimans[6] has said: "It is not possible to limit the territories of different nerves sharply from one another"; Kölliker,[7] in his work on "Injuries and Surgical Diseases of the Peripheral Nerves," wrote: "I would here state that absence of anæsthesia is no proof that a sensory or mixed nerve is not injured"; while Eichhorst,[8] in a paper on the Distribution of the Cutaneous Nerves in Man, made the statement that "injuries of the larger nerve trunks or an interruption of continuity from other causes give, as a rule, too little information on the subject."

I hope to clear up some of the uncertainties which undoubtedly exist and shall endeavour to show how they have arisen. There are four methods available for the study of the distribution of the peripheral nerves in man: (1) the anatomical by dissection, and three which can be employed in the living subject, (2) the result of section; or (3) stimulation of the nerve the distribution of which we wish to study; or (4) of section of the nerves surrounding the area we wish to map out.

The earliest method of study was the anatomical but it soon became evident that the results obtained did not correspond to those observed as the consequence of section of the nerve. Study of their distribution as revealed by the loss of sensation following injury has been practised in a desultory manner for many years but the records obtained varied with the methods of testing and were vitiated by the inclusion of cases not verified by operation. In all the cases which I shall employ to map out the area of distribution of the various nerves the nerve was seen to be divided at operation. This method, invaluable as it is to the surgeon in his interpretation of the consequences of nerve injury, gives us only the "exclusive supply" of the nerve—that is, the area to which it *alone* sends fibres; it tells us nothing of the much larger area to which it sends fibres in common with other nerves. To obtain this, the "full" area of supply, we must use the results given us by a study of the sensibility remaining after the division of surrounding nerves; this method of "residual sensibility" may be compared with the results obtained by stimulation of the trunk of the nerve.

The method of residual sensibility was first employed by Mr. Jonathan Hutchinson, sen.,[9] to determine the extent of the dorsal surface of the fingers supplied by the radial nerve. Sherrington[10] used this method in his well-known work on the distribution of the posterior roots and applied it, in man, to map out the distribution of the internal saphenous nerve.

It has been known for long that stimulation of the trunk of a nerve causes pain referred to its peripheral distribution. It is less generally known that this pain may be accompanied by definite tenderness mapping out the full distribution of the affected nerve.[11] Cheselden,[12] writing of the distribution of the ulnar nerve, remarked that "the course of this nerve is sufficiently felt when we lean on our elbow, by the insensibility and pricking pains in the parts to which it is distributed." Weir Mitchell,[13] following the example of Waller,[14] stimulated the ulnar nerve behind the internal condyle with a mixture of ice and salt; he experienced an intense burning pain over an area larger than that which later became anæsthetic as the result of the continued action of the freezing mixture. Most peripheral nerves, however, are too deeply situated to admit of this method of stimulation. But after incomplete injuries, particularly those due to gunshot wounds, marked tenderness may arise in the area supplied by the affected nerve. This area of hyperalgesia is always more widespread than the anæsthesia which results from division of the nerve and corresponds to its "full" distribution.[15]

When a peripheral nerve is divided a change takes place in the sensibility of the parts supplied by it. It has long been known how varied this loss may be, in one case corresponding to what was considered from the point of view of anatomy to be its area of supply, in another falling, apparently, far short of it.

After section of a mixed nerve, such as the median at the wrist, if no tendons have been divided at the same time, the patient is able to appreciate those stimuli commonly called tactile. A touch with a pencil, a piece of paper, the finger, or anything which deforms the skin, may be not only readily appreciated but correctly localised. When pricked with a pin the patient knows that he has been touched but fails to perceive the sharpness of the stimulus. Létiévant[16] recognised this and named it "mediate sensibility"; Laborde[17] pointed out the same fact 20 years later. I shall speak of it as deep sensibility or deep touch. But if tendons are divided at the same time or the section involves the nerve

[1] THE LANCET, August 1st, 1868, p. 142.
[2] Brain, vol. i., p. 287.
[3] Injuries and Diseases of Nerves, p. 64.
[4] Encyclopædia Medica, 1901, vol. viii., p. 282.
[5] Diseases of the Nervous System, third edition, vol. i., p. 78.
[6] Archiv für Klinische Chirurgie, 1882, Band xxvii., S. 1.
[7] Deutsche Chirurgie, Lief. 24b., S. 22.
[8] Zeitschrift für Klinische Medicin, 1888.
[9] London Hospital Reports, 1866, p. 319.
[10] Philosophical Transactions of the Royal Society, B. 190, p. 102.
[11] Clinical Journal, June 28th, 1905.
[12] Anatomy of the Human Body, tenth edition, 1773, p. 243.
[13] Injuries of Nerves, p. 59.
[14] Proceedings of the Royal Society of London, vol. ii., p. 436, vol. xii., p. 89.
[15] Head and Sherren: Brain, Summer Number, 1905, p. 245.
[16] Traité des Sections Nerveuses, Paris, 1873, p. 49.
[17] Bulletin de l'Académie de Médecine, 1893, p. 476.

above the point at which its muscular branches are given off, deep touch may be unperceived.

The point of a pin and all temperatures are unappreciated within an area which varies somewhat in each case. This I shall speak of shortly as "loss of sensibility to prick." Surrounding this area and corresponding closely to the distribution of the nerve as figured in anatomical text-books is a territory within which the patient is unable to appreciate light touches with cotton and temperatures between about 22° and 40° C. (these I shall mention hereafter as minor degrees of temperature), and fails to discriminate the points of a pair of compasses when separated to many times the distance necessary over the corresponding portion of the sound limb or the unaffected portion of the injured one. Failure to appreciate all these stimuli I shall group together under the term "loss of sensibility to light touch." Within this area of loss of sensibility to light touch, to which we gave the name of "intermediate zone," the patient is able to appreciate the sharpness of a pin prick and to differentiate temperatures below 18° C. from those above 45° C. (I shall speak of these temperatures as the more extreme degrees), naming them correctly. Thus, division of a peripheral nerve produces a well-defined loss to light touch, a smaller loss of sensibility to prick, with, as a rule, ill-defined limits and in many cases no loss of deep sensibility.

THE MEDIAN NERVE.

The effect of section of the median nerve upon sensation is the same at whatever distance from its origin it is divided. It is important to understand fully the distribution of this loss of sensibility; more mistakes have been made and wrong conclusions drawn than after division of any other nerve. Sensibility to light touch is absent over the unshaded area shown in Fig. 1.[18] On the palm it is bounded towards the ulnar side by a line running through the axis of the ring finger. At the thenar eminence the boundary curves radial-wards and then runs to the radial edge of the thumb-nail. Starting again at the ulnar border of the nail it passes along the free border of the first interosseous space and turns dorsal-wards opposite the highest fold over the first inter-phalangeal joint. On the dorsum the last two and a half phalanges of the index and middle fingers and half of the last two phalanges of the ring finger are insensitive to these stimuli. I have not yet observed anæsthesia of the dorsal surface of the terminal phalanx of the thumb as figured in many text-books. The line bounding this area of loss of light touch is well defined; on testing, starting within the anæsthetic area, and working towards the sound portion of the hand, the patient perceives the stimulus with unvarying regularity as soon as the border shown in the figure is reached. The line of transition from anæsthetic to æsthetic portions is abrupt. This area varies within very slight limits only; in no instance have I seen the ring finger unaffected and on no occasion was it seen as small as figured by Létiévant[19] as normal. But it is otherwise with the loss of sensibility to prick. It may include not quite the whole of the terminal two phalanges of the index and middle fingers (Fig. 1) or be almost as widespread as the loss of sensibility to light touch (Fig. 2)[20]. In the patients from whom these figures were taken the nerve was divided at the wrist, in Fig. 2 through a small punctured wound which divided no other deep structure. In one instance of complete division of the nerve at the elbow the loss of sensibility resembled that seen in Fig. 2. All pressure stimuli may be well appreciated and localised and the patient may be able to tell into what position his phalanges have been placed.

In many of the injuries in the neighbourhood of the wrist tendons are divided in addition to the nerve. This usually results in the appearance of an area insensitive to deep touch almost as extensive as that of loss of sensibility to prick. In the patient from whom Fig. 1 was taken the nerve was divided through an extensive wound at the wrist and many tendons were also severed; the area of loss of deep sensibility corresponded to the area insensitive to the point of a pin. Deep sensibility was present everywhere in the patient from whom Fig. 2 was taken, although the area of insensibility to prick was much greater. Thus, after division of the median nerve there may be no portion of the affected hand over which the patient cannot distinguish all stimuli usually called tactile, and an area of considerable size may be present on the palm, within which the patient appreciates the point of a pin as a diffuse, painful stimulus, and can distinguish between ice and water at 50° C. But he entirely fails to appreciate light touches with cotton-wool and temperatures between about 22° and 40° C. Here, as after division of other nerves, it is impossible to say what is the *normal* amount of insensibility to prick. Fig. 1 shows the smallest and Fig. 2 the largest which have come under my notice. It is perhaps more usual to have the analgesia confined to the fingers and the palmar surface of the thumb. This agrees closely with the diagrams given by Bowlby[21] as the usual area of loss, if the darkly shaded portions are taken to represent loss of sensibility to prick and the lightly shaded loss of sensibility to light touch.

I have so far dealt with the exclusive supply of the median nerve. In studying the full sensory distribution of this or of any nerve we must consider the full distribution of sensibility to light touch apart from that of sensibility to prick. From the standpoint of residual sensibility, it will be seen that there can be very little overlap in the fibres subserving sensibility to light touch; its exclusive and full supplies are practically identical. But it is otherwise with sensibility to prick; the full supply may bear very little relation to the exclusive. Fig. 3, representing the full area supplied by the nerve with sensibility to prick, was obtained from patients in whom the ulnar, and radial and external cutaneous nerves were divided. But it must be remembered that this area will vary from patient to patient; the diagram represents that which usually obtains. This corresponds closely to the area which became tender in a patient shot through the forearm, injuring his median nerve. Opportunities for studying the full distribution of sensibility to prick in this manner are rare in civil practice and the few instances which have come under my notice were nearly all seen at the Royal Victoria Hospital, Netley, where, owing to the kindness of Surgeon-General Stevenson, Dr. Head and myself were enabled to examine, from time to time, patients wounded during the late war in South Africa.

To sum up the sensory supply of the median nerve. It supplies sensibility to prick, partly exclusively and partly in common with other nerves, to the whole of the palm with the exception of a narrow strip along its ulnar border. On the dorsum it supplies the whole of the dorsal surface of the index, middle fingers, and in most cases the ring finger and the terminal phalanx of the thumb.

In the investigation of the paralysis resulting from any nerve injury, it is important to remember that the *action* of the individual muscles supplied by that nerve must be studied and not the movements with which their contraction is usually associated. For example, after division of the median nerve the presence or absence of contraction in the opponens pollicis muscle must be noted, not the presence or absence of opposition of the thumb. That mistakes might occur in this way was pointed out first by Swan[22] who, in recording the results of experimental section of the sciatics in dogs and rabbits, wrote: "I was at first astonished at seeing how much an animal could move its limb a short time after operation and concluded that misconceptions have arisen from considering the general motion of the limb as indications of the restoration of the nerve." Later, Létiévant[23] developed this theory and named it "supplementary motility," meaning thereby the imitation by unaffected muscles of movements usually performed by the muscles which are paralysed.

Division of the median nerve below the point at which it gives off its branches to the forearm muscles produces paralysis of the abductor and opponens pollicis muscles, together with the superficial head of the flexor brevis pollicis and the outer two lumbricales. But the paralysis of these two latter muscles is masked by the action of the interossei and the paralysis of the superficial head of the flexor brevis cannot be separated from that of the opponens. Immediately after the injury it is often easy to say that the opponens and abductor are paralysed if the observer bears in mind their actions. Abduction of the thumb, as Beevor[24] has pointed out, takes place in a plane at right angles to that of the palm; this is the action of the abductor pollicis which, even after months of practice, can only be feebly imitated by the extensor ossis metacarpi pollicis, some extension always accompanying the movement. It is otherwise with the action of the opponens pollicis; it may be so well simulated that it is impossible to tell from inspection of

[18] Head and Sherren: Loc. cit., Case 7.
[19] Traité des Sections Nerveuses, p. 42.
[20] Head and Sherren: Loc. cit., Case 5.
[21] Injuries and Diseases of Nerves, Figs. 17 and 18.
[22] A Treatise of Diseases and Injuries of Nerves, 1834, pp. 30, 207.
[23] Traité des Sections Nerveuses.
[24] Croonian Lectures, THE LANCET, June 20th, 1903, p. 1717.

FIG. 1.

FIG. 2.

FIG. 3.

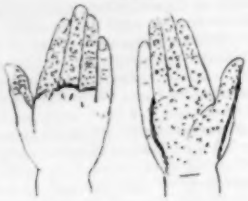


FIG. 4.

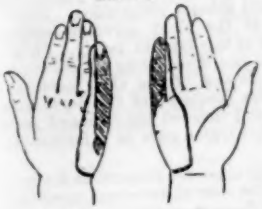


FIG 5.

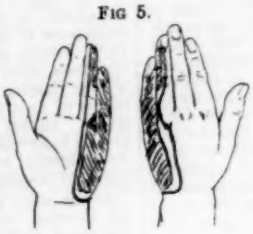


FIG 6

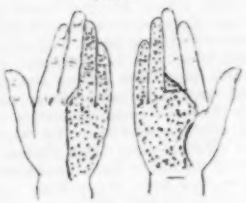


FIG. 7.

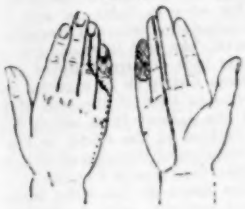


FIG. 8.

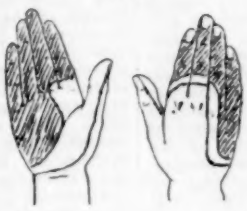


FIG. 9.

FIG. 10.

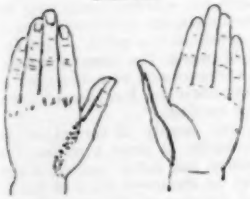


FIG. 11.

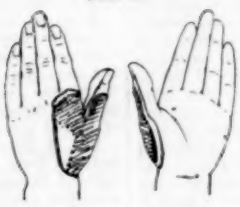
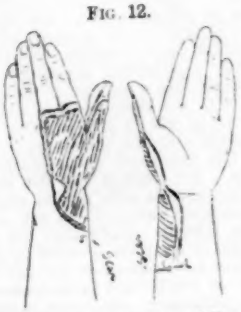


FIG. 12.



In all the diagrams the shaded area represents "loss of sensibility to prick and to light touch"; the unshaded, "loss of sensibility to light touch." Fig. 1 and Fig. 2: Loss of sensibility produced by division of the median nerve. (Note wide variation in loss of sensibility to prick.) Fig. 3: "Full" supply of the median nerve with sensibility to prick deduced from "residual sensibility." Fig. 4 and Fig. 5: Loss of sensibility produced by division of the ulnar nerve. Fig. 6: "Full" supply of ulnar nerve deduced from residual sensibility. Fig. 7: Loss of sensibility produced by division of the ulnar nerve below the point at which its dorsal branch is given off. Fig. 8: Loss of sensibility produced by division of the median and ulnar nerves. Fig. 9: Loss of sensibility produced by division of the whole musculo-spiral nerve. (Note the indefinite boundary towards the radial side in comparison with Fig. 11 and Fig. 12.) Fig. 10: Loss of sensibility to light touch produced by division of the radial nerve in the lower third of the forearm. (Note its ill-defined boundary on the dorsum towards the ulnar side.) Fig. 11: Loss of sensibility produced by division of the radial nerve and posterior branch of the external cutaneous nerve. Fig. 12: Loss of sensibility produced by division of the radial and external cutaneous nerves. In Fig. 11 and Fig. 12 the triangular areas on the dorsum, bounded towards their ulnar side by a continuous line and towards their radial side by a dotted line, represent the area sensitive to light touch but insensitive to prick.

the movement that it is produced by the adductors and flexors of the thumb and not by the opponens. Palpation over the insertion of the muscle into the metacarpal bone of the thumb is the only way to avoid error in these cases. After division of the nerve at the elbow the paralysis is less than would be expected and falls principally upon the index and middle fingers and the thumb. In one patient[25] in whom I performed primary suture of the nerve at the wrist I could discover no paralysis of the thumb muscles before operation. At the operation I found that the branch supplying these muscles came off in the lower third of the forearm and was uninjured. I have been unable to find any mention of this abnormality in anatomical literature but Bowlby[26] has recorded a somewhat similar instance.

The effect of division of the median nerve upon motion and sensation gave rise to much controversy, particularly in France in the sixth and seventh decades of the nineteenth century. In one week in June, 1864, two cases of primary suture were reported at the Société de Chirurgie and the Académie des Sciences. The first[27] was a patient upon whom Nélaton had operated, resecting a portion of the nerve with a neuroma; the second, a case of accidental division at the wrist, in which Laugier[28] had performed the operation. Both were regarded as cases of "primary union" and resuscitated the doctrine to which Waller's work had seemed to give the death blow. It is instructive to note that in Laugier's case, three days after suture, although tactile sensibility had returned, pain and temperature were not perceived. It is evident that the so-called return of function was the perception of deep sensibility by fibres which had not been severed. Three years later Richet[29] in a case of accidental division of the nerve, discovered that sensation was preserved in the median area, the palmar surfaces of the index and middle fingers alone showing numbness. His method of testing explains the small amount of sensory loss obtained. An account of this has been preserved in a letter written to THE LANCET by Lockhart Clarke,[30] who saw the case; he wrote: "With a piece of stiff paper rolled up into the form of a stick [he] tickled in the most perplexing way different parts of the fingers and palm supplied by the median nerve. In almost every instance the patient mentioned, without hesitation and with great accuracy, the particular spot touched. Nevertheless, sensibility, though not abolished, was somewhat impaired, as was evident when a pin was used instead of paper to excite the skin. The application of heat and cold to the hand was not attended with very satisfactory results." Richet[31] also gives us a most interesting account of Nélaton's case and states that he (Nélaton) observed the retention of sensibility before the insertion of the sutures but in spite of his astonishment said nothing. It is also reported of Laugier's case[32] that sensibility was not tested before the nerve was sutured, that Vulpian could find no trace of sensation in the median area 15 days later, and that even after 17 months Magnien found that sensation was not normal. Thus we see the slender foundation on which these cases of so-called "primary union" rested. Since that date other instances of retention of function after division of the nerve have been recorded. Thus, Nott[33] excised a tumour of the forearm, together with five inches of the median nerve, "neither paralysis nor loss of sensation resulting"; no further details are given. In Kraussold's[34] well-known case a portion of the nerve was excised with a neuroma in the lower third of the arm. No alteration in sensibility is said to have resulted. With regard to motion he reported that the thumb and index fingers could not be flexed but opposition and abduction of the thumb were possible. The patient was five and a half years old, not an age compatible with minute sensory examination, and as movements are recorded and not the action of the affected muscles, it seems certain that the case presented the usual symptoms of complete division of the nerve. Several other cases have been published, the last in 1900[35] with a further account in 1903,[36] but in no instance are the records perfectly satisfactory. All these cases can be explained by a careful study of the loss of the different forms of sensibility which results from division of the nerve.

[25] Head and Sherren: Loc. cit., Case 5.
[26] Injuries and Diseases of Nerves, p. 173.
[27] Bulletin de la Société de Chirurgie, June 22nd, 1864.
[28] Comptes Rendus, 1864, Tome lviii., p. 1139, Tome lix., p. 115.
[29] L'Union Méticale, Nov. 14th, 1867.
[30] THE LANCET Dec. 14th 1867.
[31] L'Union Méticale, Nov. 14th, 1867.
[32] Weir Mitchell: Injuries of Nerves, p. 239.
[33] Ibid., p. 240.
[34] Archiv für klinische Chirurgie, Band xxi., S. 448.
[35] Peraire et Mally: Revue de Chirurgie, 1900, vol. xxii., p. 655.
[36] Durante: Nouvelle Iconographie de la Salpêtrière, 1903, p. 321.

THE ULNAR NERVE.

The ulnar nerve is particularly liable to injury at the elbow and at the wrist. Owing to its position behind the internal condyle the injury usually results from pressure, suddenly applied, such as direct blows, or gradually, by callus or displaced bone. Consequently fewer opportunities present themselves for studying the effects of complete division in this situation. In connexion with these injuries at the elbow I would draw attention to those cases of interference with the functions of the nerve many years after an injury, usually a fracture of the lower end of the humerus. Panas[37] first described these cases in 1878 and gave a full account of a man aged 40 years who had sustained a fracture of the lower end of the humerus 13 years previously. For six months before coming under observation he had noticed gradually increasing interference with the functions of the nerve. Bowlby[38] mentions this case in his book and describes a similar one. Some years later Weber[39] reported two instances; in one the injury dated back 27 years. These cases seem to have escaped general recognition. Payr,[40] in 1900, writing on lesions of the ulnar nerve in injuries of the elbow, does not allude to this type of injury. To a case of this description I owe one opportunity of studying the effects of uncomplicated division of the ulnar nerve at the elbow. In this patient the functions of the nerve were so greatly interfered with that I resected the damaged portion. An accidental wound in this region gave us a further opportunity of investigation.

At the wrist wounds with glass are responsible for most of the injuries. So far as the loss of *cutaneous* sensibility is concerned it makes no difference at what level the nerve is divided above the point at which its dorsal branch is given off; even division in the axilla does not increase the insensitive area; but the extent of the loss of deep sensibility may be markedly increased. Sensibility to light touch is lost over both surfaces of the little and half the ring fingers with a corresponding portion of the palm and dorsum of the hand. This area is liable to very little variation and has the characteristics which I described in speaking of the median nerve. An area insensitive to prick is present over the little finger back and front and a portion of the ulnar palm varying from a strip on its extreme border to an area almost as extensive as that of the loss of light touch (Figs. 4 and 5). In the patient from whom Fig. 4 was taken[41] the nerve was divided at the elbow, in Fig. 5[42] at the wrist. In the other instance of division of the nerve at the elbow the loss resembled that seen in Fig. 5.

Accidental division of the nerve at the wrist is rarely unaccompanied by division of tendons; such a case has not come under my notice but in two instances the conditions were closely allied to this. In one patient[43] several inches of the nerve had been removed in the forearm in the hope of curing an inveterate neuralgia. Deep sensibility was lost over the terminal two phalanges of the little finger, back and front. On the other hand, division of the nerve at the elbow produced an area insensitive to pressure as great as that insensitive to prick.

It might be supposed that the internal cutaneous nerve helped to supply the intermediate zone, which appears after division of the nerve, with sensibility to prick. This is not the case, for in a patient in whom the internal cutaneous nerve was resected with a recurrence of a neuroma after previous division of the ulnar nerve no increase of the area of loss of sensibility to prick resulted.[44]

Fig. 6, illustrating the full supply of the ulnar nerve deduced from residual sensibility, is from a patient[45] who suffered division of his median and radial nerves, together with the external cutaneous in the lower third of the forearm, and from instances of division of the musculo-spiral. But it must be remembered that it varies in extent particularly on the palm. This area corresponds very closely to that which became hyperalgesic as the result of incomplete division of the nerve.

The nerve is frequently divided below the point at which

[37] Archives Générales de Médecine, 1878, p. 5.
[38] Injuries and Diseases of Nerves, p. 255.
[39] Deutsche Zeitschrift für Nervenheilkunde, 1899, S. 181.
[40] Deutsche Zeitschrift für Chirurgie, 1900, S. 167.
[41] Head and Sherren: Case 18.
[42] Ibid., Case 15.
[43] Ibid., Case 83.
[44] Ibid., Case 42.
[45] Ibid., Case 85.

its dorsal branch is given off. In Bowlby's[46] experience it was most often injured above this point; but of the accidental divisions of the nerve at the wrist which have come under my notice it was affected an equal number of times in each situation. Very little attention has been paid to injury here. Among the recent text-books of surgery and diseases of the nervous system Rose and Carless[47] and Oppenheim[48] alone draw attention to the fact that in division of the nerve immediately above the wrist the anæsthesia is confined to the palm of the hand and the dorsal surfaces of the phalanges. Yet it is the nerve injury, after the median, which is most often overlooked. The limited degree of disturbance of sensation which it produces accounts for this.

Light touch cannot be appreciated over an area on the palm (Fig. 7) corresponding exactly to that which is affected after section of the whole nerve. Its palmar boundary is extremely definite, but at its ulnar border it gradually merges into the normal sensibility of the dorsum of the hand; there is here no well-defined boundary between sensitive and insensitive parts. On the dorsum, the terminal two phalanges of the little and half of the terminal two phalanges of the ring fingers usually become insensitive to these stimuli. Deep sensibility is everywhere retained. The extent of the area insensitive to prick varies greatly; in some cases there is no portion of the affected area where a prick is not perceived. Usually the terminal phalanx of the little finger is insensitive but an area almost as large as that of the loss of sensibility to light touch may be present. This area of loss of sensibility to prick may vary in extent from time to time in the same patient. In a girl[49] in whom at the operation I discovered that the ends of the nerve had been united to tendons the extent of insensibility to prick varied from a small area on the palm to one almost corresponding to that of the loss of sensibility to light touch.

Division of the nerve at the elbow causes paralysis of the flexor carpi ulnaris and the ulnar half of the flexor profundus digitorum, in addition to certain of the intrinsic muscles of the hand. Of the affected forearm muscles the flexor carpi ulnaris is the only one the action of which can be seen definitely to be lost, but it is compensated for somewhat by the action of the palmaris longus. The intact tendons of the flexor sublimis are unable to flex fully the little and ring fingers. This paralysis of the forearm muscles may be easily overlooked.

With regard to the hand, certain of the movements usually produced by the paralysed muscles can be imitated. Adduction of the thumb—that is, movement of the thumb towards the second metacarpal bone in a plane at right angles to that of the palm, cannot be performed, but when the patient squeezes the observer's finger between his index finger and thumb, a movement occurs which resembles adduction. The muscle which produces it is, in some instances, the long extensor, in others the long flexor of the thumb; it is accompanied in the former case by extension of the whole thumb and outward rotation, in the latter by flexion of the terminal phalanx and palmar rotation. But this is not the only movement that can be imitated. Abduction of the index and little fingers can be performed to a limited extent by means of their extensor tendons, but the movement is always accompanied by an increase of the extension present as the result of the lesion. The contraction of the first lumbrical can sometimes be felt in the first interosseous space and its reaction to the interrupted current may simulate that of the first dorsal interosseous. If these facts are borne in mind no difficulty should exist in interpreting the results on motion of the division of this nerve.

There appears to be great unanimity with regard to the area which becomes insensitive after division of the whole nerve. We read little of its division without sensory or motor paralysis, or of instances of "primary union." There are two cases of "division at the elbow without marked motor or sensory paralysis" that are widely quoted, those of Pirogoff and Kiallmark. The former[50] is reported as follows: "To my astonishment I saw no paralysis of the fourth or fifth finger after complete division of the softened ulnar nerve in a resection of the elbow-joint. ..... The fingers retained their sensibility, whether completely or not I was not able to ascertain from the patient." The last part of this sentence is usually omitted. Kiallmark[51] reports his as follows: "Protruding from the upper side of the wound was a piece of whitish tissue which I could not replace; I therefore removed it. ..... On examining what I had cut off I found it to consist of about one-eighth of an inch of the trunk of the ulnar nerve with the commencement of a branch given off from it. Beyond a little numbness of the little and ring fingers he never complained of the slightest impairment of sensibility or movement in the hand or forearm and in a few days resumed his work as a chimney-sweep."

I think it will be agreed that these cases are not suited to the purpose to which they have been put.

The figure which Bowlby[52] gives, translated into terms of light touch and prick, agrees with what I should consider the average loss of sensibility, as does that given by Létiévant.[53]

Some difference of opinion seems to exist with regard to the extent of sensory loss on the dorsum of the hand. Bernhardt[54] and others include the ulnar half of the basal phalanx of the middle finger and all the dorsum to the ulnar side of a line drawn upwards from this. On no occasion have I seen so extensive an area affected.

In conclusion, the whole ulnar nerve supplies with sensibility to light touch one and a half fingers and the corresponding portion of the palm and dorsum of the hand. With sensibility to prick exclusively, and in common with other nerves, the little and ring fingers, the palm, with the exception of the thenar eminence, and on the dorsum that portion of the hand to the ulnar side of a line drawn through the axis of the middle finger.

THE MEDIAN AND ULNAR NERVES.

Division of the median and ulnar nerves together at the wrist is by no means an uncommon accident. The area insensitive to light touch occupies the whole of the palm and palmar surfaces of the thumb and fingers. Its boundary towards the radial side is that seen after division of the median nerve. (Fig. 8.) On the dorsal, as on the palmar surface, the loss of sensibility to light touch corresponds exactly to that produced by division of the ulnar nerve, added to that caused by section of the median. The loss of sensibility to prick varies with the extent to which the radial portion of the palm is supplied with this form of sensibility from the radial and external cutaneous nerves. Usually the loss of sensibility to prick extends from the ulnar side to the cleft between the index and middle fingers; the palmar surface of all the fingers is affected. On the dorsal surface the area insensitive to these stimuli does not differ from the sum of that which results from division of the nerves separately. In those cases in which the median nerve supplies exclusively a large portion of the radial half of the palm and palmar surface of the thumb the area of loss is correspondingly greater. Fig. 8 also gives the full supply of the radial and external cutaneous nerves on the palm of the hand. After the usual accidental division of the median and ulnar nerves with many tendons, deep sensibility is abolished over an area as extensive as that insensitive to prick. To ascertain the extent of insensibility to deep touch it is necessary to investigate a case uncomplicated by division of tendons. Such an opportunity presented itself in a patient[55] in whom the median and ulnar nerves and many tendons had been divided. The tendons had been sutured immediately after the accident but the nerve lesion overlooked. After the operation for secondary suture, performed six months after the injury, he could appreciate and localise deep touch correctly over the whole area insensitive to prick with the exception of the palmar aspect of the little finger and the greater part of its dorsal surface, an area which becomes insensitive to deep touch whenever the whole ulnar nerve is divided at the wrist.

THE MUSCULO SPIRAL NERVE.

It has become one of the commonplaces of surgery that the musculo-spiral nerve may be divided without causing any marked loss of sensibility. This was first recorded by Savory[56] and I cannot do better than quote his account: "When testing the sensibility of that portion of the skin

[46] Injuries and Diseases of Nerves, p. 84.
[47] Manual of Surgery, fourth edition, p. 319.
[48] Lehrbuch für Nervenheilkunde, Auflage 3, 1902.
[49] Head and Sherren, Case 24.
[50] Grundzüge der Kriegschirurgie, S. 377.
[51] THE LANCET, Nov. 30th, 1867, p. 681.
[52] Injuries and Diseases of the Nerves, Figs. 15, 16.
[53] Traité des Sciences Nerveuses, p. 24.
[54] Die Erkrankungen der Peripherischen Nerven, Theil I., taf. 3.
[55] Head and Sherren, Case 28.
[56] THE LANCET, August 1st, 1868, p. 142.

of the hand which is supplied by branches of the radial nerve we were not a little astonished to find that it was but little impaired. When the skin ..... was lightly pricked the man cried out sharply. He could distinguish in the same region two points of contact when they were not more than an inch apart, both in the long and in the transverse axis of the hand; but when they were closer than this on any part of the back of either hand or forearm he confused them, and, indeed, in comparing the sensibility of this region with that of the inner portion of the back of the hand and two inner fingers or with the corresponding part of the opposite hand no very striking difference could be detected. All portions, too, of the back and sides of the middle finger appeared to be equally sensitive. He could distinguish also between contact of hot and cold bodies in this region as well as in other parts."

Many similar cases have been recorded. Among them are two cases reported by Kennedy[57] in which the nerve was divided in the lower third of the arm without producing marked sensory change, and one reported by Parry[58] in which two inches of the nerve were destroyed at the elbow without producing any definite loss of sensibility. Ledderhose[59] reports a case in which the nerve was ruptured as the result of a compound fracture of the lower end of the humerus.

I am convinced that this nerve may be completely divided in the lower third of the arm without producing loss of sensation that can be discovered by any method of testing yet devised.

The following is a case[60] of this character. A boy, aged nine years, suffered a complete section of his musculo-spiral nerve just above its point of division. Both before and after I had performed secondary suture no loss of sensibility could be detected to the most delicate tests. But this statement applies only to division of the nerve below the point at which its external cutaneous branches are given off. Division above this point produces a definite loss of sensation. But the amount of this loss varies in different patients according to the relative size of the posterior branch of the external cutaneous nerve. In two patients in whom the musculo-spiral nerve was injured in the axilla as the result of a gunshot wound all forms of cutaneous sensibility were absent over a large area on the dorsum of the hand. Fig. 8 shows the extent of this loss in one patient; in the other it was a little less. This statement is borne out by a study of the recorded instances of verified division of the musculo-spiral nerve in the upper part of the arm. Among them I might mention two cases reported by Mr. R. Clement Lucas[61] of division three and five inches below the point of the shoulder, the case recorded by Kennedy,[62] and Reger's[63] case in which the nerve was divided just below the insertion of the deltoid. In all these instances definite loss of sensibility resulted. Fessler[64] says that "the integrity of radial sensibility after injury to the musculo-spiral nerve in fractures of the shaft of the humerus is, in my opinion, most often met with when the fracture injuring the nerve is in its lower third."

As would be anticipated, division of the radial nerve in the upper half of the forearm produces no loss of sensibility. I have had the opportunity of examining patients in whom portions—in one case two and a half inches—of the nerve had been resected without causing sensory loss. On the other hand, division in the lower third of the forearm has a definite effect upon sensibility. Fig. 10 is taken from a patient[65] in whom I divided the nerve just after it had passed beneath the tendon of the supinator longus. This produced a loss of sensibility to light touch, with well-defined limits towards the thenar eminence and on both borders of the thumb but on the ulnar side ill-defined and fading gradually into the normal sensibility of the dorsum of the hand. This corresponds to the result seen in several cases after accidental section in this situation. At a second operation a few days later I divided the posterior branch of the external cutaneous nerve at the elbow. This resulted in an extension of the area of insensibility to light touch towards the ulnar side and an area of loss of sensibility to prick made its appearance. Deep sensibility was everywhere present (Fig. 11).

We are now in a position to study the nerve-supply of the "radial area" of the dorsum of the hand. Nowhere are the results as obtained by dissection more at variance with those found after operation. No one nerve can be said to supply this area in a manner similar to the supply of the ulnar area of the dorsum by the ulnar nerve. Two nerves take part, the musculo-spiral, including its external cutaneous branches, and the external cutaneous (musculo-cutaneous) nerve. But the extent supplied by the branches of the musculo-spiral and by the external cutaneous nerve seems to vary.

Thus division of the musculo-spiral nerve above the point at which its external cutaneous branches are given off produces an area of loss of sensibility to light touch and to prick on the dorsum of the hand. This may be almost as extensive as the "radial area" but often falls short of this on its radial side and varies in extent with the respective sizes of its external cutaneous branch and the external cutaneous branch of the external cutaneous nerve.

Division of the radial together with the external cutaneous nerve produces an area of loss of sensibility, well defined towards the thenar eminence, ill defined and of varying extent towards the ulnar side. Fig. 12 was taken from a patient[66] in whom, as the result of an accidental wound, the radial and external cutaneous nerves were divided in the lower third of the forearm. By comparison with Fig. 11 we see the variation in the extent of skin supplied by the external cutaneous branch of the musculo-spiral.

Before we discuss fully some peculiarities in the resulting sensory loss it will be well to review the reasons which have been given for the absence of loss of sensibility after division of the musculo-spiral nerve. Kennedy considered[67] that the cases of retention of sensation after division of this nerve were due to abnormal smallness of the radial, its place being taken by the median. Létiévant does not draw particular attention to it but considers it as an example of supplementary sensibility. Henriksen[68] says that "slight or no anæsthesia after division of the musculo-spiral has given rise to the opinion that it does not supply an area alone." Continuing, he says: "This is not confirmed by my cases. ..... When the musculo-spiral nerve has seemed to be different from other nerves, this must be supposed to be owing to the character of the injuries to which this nerve is exposed." But the cases which he has published do not bear out these statements; he has described no instance of uncomplicated section of the musculo-spiral nerve. Zander[69] says that the radial and ulnar nerves do not alone take part in the sensory supply of the dorsum of the hand but that the musculo-cutaneous and lower external cutaneous branch of the musculo-spiral also share in its supply. Savory considered the peculiarity due to anastomoses with the external cutaneous. Thus, Savory and Zander had a closer conception of the nerve-supply of this region than other and later observers.

It appears that the nerve fibres which supply the radial area with light touch do not run in any one nerve branch and that division of the musculo-spiral below its cutaneous branches or of the radial is comparable to division of a branch of a nerve which may produce no demonstrable effect upon sensation. But it is no exception to the rule that I have laid down that division of a peripheral nerve, meaning thereby the whole nerve and not one of its branches, produces a definite area of loss of light touch larger than that of insensibility to prick. For division of the whole musculo-spiral produces an area of insensibility to light touch and prick which is well defined towards its ulnar side but has an ill-defined boundary on its radial, the area insensitive to light touch being greater than that insensitive to prick. In some cases division of the whole musculo-spiral may produce anæsthesia in the forearm; so far I have not observed this.

To return to the phenomena observed after division of the radial and external cutaneous nerves. We had several opportunities of investigating them with great care. Division either at the wrist or at the elbow produces a curious dissociation of sensibility. In Figs. 11 and 12 it will be seen that this area of dissociated sensibility was roughly of a triangular shape. Prick and the extreme degrees of heat and cold

[57] Brit. Med. Jour., 1898, vol. ii., p. 1399.
[58] Glasgow Medical Journal, 1897.
[59] Deutsche Zeitschrift für Chirurgie, 1887.
[60] Head and Sherren, Case 43.
[61] Guy's Hospital Reports, 1889, p. 1.
[62] Brit. Med. Jour., vol. ii., 1898 p. 1399.
[63] Berliner klinische Wochenschrift, 1884, 21.
[64] Deutsche Zeitschrift für Chirurgie, Band lxxviii., Hefte 1-3, S. 60.
[65] Head and Sherren, Case 44.
[66] Head and Sherren, Case 47.
[67] Brit. Med. Jour., vol. ii., 1898, p. 1399.
[68] THE LANCET, April 11th, 1903, p. 1020.
[69] Berliner klinische Wochenschrift, 1890, No. 8.

could not be appreciated over the whole affected area, but light touches with cotton-wool and the minor degrees of heat and cold were recognised. This dissociation of sensibility is important in the theoretical consideration of sensation and I shall have to return to it later.

Deep sensibility may be studied here with great exactitude, for a large area is present insensitive to all cutaneous stimulation. Touches with the head of a pin or even with a piece of cotton-wool rolled up tightly and applied vertically can be well appreciated and localised, but the patient cannot distinguish between the head and point of a pin or between a pin and the end of a cylindrical rod three centimetres in diameter.

When the whole external cutaneous nerve is divided a definite area of sensory loss makes its appearance. On the flexor surface of the forearm its boundary is well defined and corresponds to a line drawn upwards from the cleft between the middle and ring fingers. At this line the loss of sensibility to light touch and to prick is coterminous. Posteriorly no such definite line is produced and the area of loss is limited to the radial border of the forearm; its border is ill-defined and sinuous, gradually fading into parts of normal sensibility. Division of its posterior branch may produce no loss of sensation in the forearm, as in the case already quoted; section of the anterior in the lower half of the forearm led to no loss in a patient who was under my care.[70]

If the internal cutaneous nerve be divided at the elbow loss of sensibility results, bounded towards the radial side both on the flexor and extensor aspects of the forearm by a well-defined line. This boundary corresponds to a line drawn upwards from the axis of the ring finger to the tendon of the biceps on the anterior surface and to the olecranon on the posterior. Both forms of sensibility are lost up to this line until the region of the wrist is reached; here the area insensitive to prick becomes much smaller than that insensitive to light touch.

It is now possible to describe the nerve-supply of the forearm; on the ulnar side it is simple, the internal cutaneous. On the radial two nerves are responsible, the external cutaneous and the lower external cutaneous branch of the musculo-spiral. There is practically no overlap between the nerves supplying the ulnar (post-axial) half and those supplying the radial (pre-axial) half of the forearm, consequently the full and exclusive supplies of these nerves is identical.

[70] Head and Sherren, Case 45.

The Milroy Lectures

ON

EPIDEMIC DISEASE IN ENGLAND—THE EVIDENCE OF VARIABILITY AND OF PERSISTENCY OF TYPE.

Delivered before the Royal College of Physicians of London on March 1st, 6th, and 8th, 1906,

BY W. H. HAMER, M.A., M.D. CANTAB., F.R.C.P. LOND.

LECTURE III.[1]

Delivered on March 8th.

MR. PRESIDENT AND GENTLEMEN,—We have seen that influenza was prevalent in Europe and America during the early years of last century, that it recurred in the "thirties" and "forties," and recurred again in the "nineties"; a close parallel to these waves of influenza is afforded by the outbreaks of "*throat distemper*" in Europe and America in the "forties" and "seventies" of the eighteenth century and again in the early years and in the "thirties," "sixties," and "nineties" of the nineteenth century. Records which tally closely with our modern delineations of disease do not date far back; even Sydenham in his account of scarlet fever makes no mention of sore-throat, nor does Sibbald. Morton describes it as a "confluent measles." Willan, Wintringham, and Hillary include cases which would doubtless now be called diphtheria. Like difficulties are met with in the descriptions of Huxham, Fothergill and the Americans, Douglas and Colden, and Bard. All through the eighteenth century this confusion continues and the frequent mention of miliary eruptions complicates matters not a little. In 1777–78 Levison's and Wintringham's descriptions accord more closely with latter-day conceptions of scarlet fever. As to diphtheria, dimly discernible as "garotillo," "morbus strangulatorius," and malignant, putrid, gangrenous, &c. sore-throat, it was only in 1821 that Bretonneau even gave it its name and it is not until 1855 that scarlet fever and diphtheria are distinguished in our own official returns. Clearly evidence of persistency of type manifested throughout a long period must not be looked for in throat distemper.

In the case of *continued fever* the difficulties are even greater. Murchison suspects that the old Greek physicians saw and described typhus, relapsing, and enteric fevers, but the early records in this country are very perplexing. The famine fevers, gaol fevers, and later some of the ship and camp fevers were presumably typhus fever, and in the seventeenth century this malady fairly settled down in the towns. It has been suggested that relapsing fever contributed some of the material worked upon by medical writers in 1709 and 1710, and Rutty's description dates from 1739. The final differentiation of enteric fever from typhus is of course a matter of comparatively recent history. Two questions of special interest from an epidemiological point of view stand out very clearly. There is the ability of typhus fever to smoulder—it smouldered among the prisoners who infected those assembled in assize courts[2] in the sixteenth century and it smoulders in London, Liverpool, and Dublin at this day. In the second place, there is the close relationship between relapsing fever and typhus, on which Murchison[3] commented and Fagge, Thompson, and others have laid stress. The distribution of prevalences of these maladies in time and space is strikingly similar; their relation to famine and their merging into one another in the same epidemic may be also referred to. Rabagliati says: "In epidemics of relapsing fever ..... even before it was properly distinguished from typhus fever, we find records of a low mortality at the beginning of the epidemic, of an increasing mortality as the epidemic advanced, and of a mortality which was highest towards the close of the epidemic. This was particularly noticed in the epidemics of 1817–18 and in 1819; the most probable inference seems, therefore, to be that there was a mixture of cases of relapsing and of typhus fever and that their relative frequency at different periods of the epidemic determined the observed mortality."[4]

In applying the historical method of inquiry to scarlet fever and diphtheria, and still more to continued fever, the data are obviously less complete than in plague and influenza. The problems, on the other hand, which arise from the bacteriological point of view take perhaps more definite shape. To a still greater extent are divergences of like sort apparent in dealing with *tuberculosis*. Historically there is little to guide us. The steady decline in the death-rate from pulmonary tuberculosis in the last 50 years has been attributed to the operation of a large number of factors, among which cheaper food and improved hygienic surroundings, inheritance of capacity to resist attack, weeding out of the less resistant, drying of subsoil, cyclical alterations of virulence, segregation of cases, and so on, have especially been mentioned. It is not unlikely that the supposed reduction is to no inconsiderable extent the result of altered nomenclature. In any case the statistics admittedly become very unreliable after proceeding backwards for 40 or 50 years. From the bacteriological point of view the tuberculosis question is, however, most interesting. I do not

[1] Lectures I. and II. were published in THE LANCET of March 3rd (p. 589) and 10th (p. 655), 1906.

[2] The prisoners themselves were known to be ill in some instances; alternatively infection was attributed to "devilishly contrived and obviously papistical spirits" (Oxford Black Assizes, 1577).

[3] Murchison (p. 320) refers to Rutty's statement that "70 of the poorer sort ..... abandoned to the use of whey and God's good providence recovered" (1739).

[4] This writer observed in 1869–70 that several patients who had contracted relapsing fever later developed typhus fever, but he did not meet with cases in which typhus was followed by relapsing fever. Recent investigation seems to point to the bug as the common means of conveyance of relapsing fever. In the Congo a disease closely resembling, if not identical with, relapsing fever is conveyed by ticks.

propose here to do more than briefly note Arloing's conclusions, to which Dr. H. T. Bulstrode has drawn my attention, to the effect that the various tubercle bacilli "are only varieties of one and the same species and that no marked delimitation separates them" and, again, that they "form a sort of chain in which enter from time to time links bigger than the others, representing, so to speak, the types accepted by some bacteriologists."

It is generally admitted that the persistency of type displayed by *measles* and *small-pox* is quite remarkable. For that reason they afford specially promising material for study of short period waves, and in turning therefore to the examination of variability of type these two diseases may with advantage be considered in the first instance. The simplest case is that of the short-period waves of measles. The explosions in towns occur commonly at about biennial intervals, "when the accumulation of susceptible persons is sufficient and the climatic and other internal conditions offer sufficiently small resistance. ..... The mean seasonal wave shows two maxima—two points of least resistance six months apart," and hence the interval between the explosions "when not exactly two years is frequently one and a half or two and a half years" (Whitelegge). The problem (in the case of measles in a large community) is simplified for the reasons that we are dealing with an obligatory parasite. Hence questions of saprophytic growth, of food outbreaks, &c., do not arise. Furthermore, one attack confers almost complete protection.[3] Again, infection spreads readily from person to person, population being densely aggregated and new susceptible material added in sufficient quantity and with sufficient frequency to favour stable epidemic movement.

I have taken the London figures and assumed a case-mortality of 2½ per cent. By first plotting out weekly figures for periods selected as presenting typical epidemic movement and then superimposing one wave upon another a curve is obtained with a maximum of 6400 cases (160 deaths), declining after an interval of 39 weeks to a minimum of 400 cases (10 deaths) weekly. Such a curve with waves of approximately 18 months period and maxima occurring alternately in summer and in winter furnishes the type to which London measles conforms.

The London population is augmented weekly by addition of some 2500 susceptibles, or, allowing for the comparative insusceptibility of very young infants, and taking into account their high mortality from causes other than measles, say by 2200 susceptibles. Furthermore, the incubation period of measles being approximately a fortnight the 39 weeks (ML) may be looked upon as comprising 19½ such periods. Up to the time of reaching A the number of cases is increasing, it then diminishes; similarly, up to the time of reaching K the cases diminish and then subsequently increase. In passing these points increase is converted into decrease, or *vice versâ*, the tangent to the curve at the instant being horizontal and stationary. It will be apparent, therefore, that at A each case may be regarded as infecting one other case; this will also hold good at K.

If the virulence of the measles organism and other factors be assumed to be the same at A and K, it will follow, inasmuch as each case is then capable of infecting one other case, that the number of susceptible persons in the population at these points of time will be identical.

If the ordinate BT be = 2200 then at B the number of susceptible persons is at its minimum, for during the period M to T (A to B) those attacked each week outnumber the susceptibles newly added. At the corresponding point C the number of susceptibles is at a maximum, for the susceptibles newly added between K and C exceed in each week the number attacked.

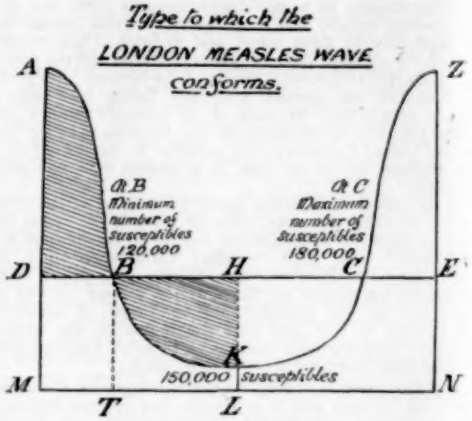
Further, area ADB = area BHK;

for the former represents the excess of persons attacked over susceptibles newly added in the time MT; and this must be equal to the excess of those newly added over those attacked in the time TL.

The areas ADB, BHK may be approximately determined. Area ADB is rather greater than $\frac{AD.DB}{2}$, i.e., $\frac{(6400-2200)\times 14}{2}$ and is thus = 30,000 approximately. Thus, during the period B to C the number of susceptibles in the population must be augmented by some 60,000.

We may further determine the actual numbers of susceptibles at A, B, K, and C. In the neighbourhood of B the cases fall in a fortnight from about 2500 to 2000. Assume the number of susceptibles at A to be x, the number at B will be $x-30,000$. If the lessened ability to infect at B be solely due to diminution in number of susceptibles we may write $\frac{x-30,000}{x}=\frac{2000}{2500}$, i.e., $x=150,000$ approximately. On this showing the measles wave in London shows fluctuation from a maximum number of 150,000 susceptibles (at A) to a minimum of 120,000 susceptibles (at B, reached 14 weeks after A). At this point B, instead of each case infecting another case, five cases approximately produce only four; the number must then further decline to about 400 a week (at K), when the susceptibles again attain to 150,000; proceeding onwards to C, the apparent infective power of each case continues to increase (on reaching C four cases approximately reproduce five) and the number of susceptibles is at its maximum (180,000), but on proceeding further, it falls until it is again 150,000 at the crest of the wave. At C the condition $\frac{x+30,000}{x}=\frac{2500}{2000}$, if applied, would give a somewhat lower value of x than that already obtained. In other words, the curve cannot be exactly symmetrical in relation to ordinates drawn through HKL, and if we wish to be precise it should be "skewed" accordingly. It is indeed remarkable, having in view the hypothetical character of some of the conditions laid down and the extent to which disturbing factors (climate, school influence, differing densities of population, &c.) might be expected to operate, that the type is so consistently adhered to. This examination shows the absurdity of assuming that an epidemic comes to an end because all the susceptibles have been attacked; or, again, of expecting to find explanation of the decline in loss of virulence of the organism or of its infecting power. Dr. A. Davidson points out that "retardation in the rate of spread is not to be accounted for solely by the reduction in the actual number of the susceptible, for the number attacked subsequent to the slowing of the ratio of increase is greater than that up to the point where the retardation begins"; but, he adds, the "diminished density of the susceptible has to be taken into account," it "must have an effect in slowing the rate at which attacks proceed." The measles curve just defined sufficiently indicates that an epidemic may come to an end despite the existence of large numbers of susceptible persons in the population, merely on a "mechanical theory of numbers and density," and that the assumption of loss of virulence or infecting power on the part of the organism is quite unnecessary.

FIG. 7.



$ML = 39$ weeks $MN = 78$ weeks
$DM = 2,200$ susceptibles added weekly
$AM = 6,400$ cases (160 deaths)
$KL = 400$ cases (10 deaths)

In the light of the facts elicited concerning measles some peculiarities in the behaviour of influenza become explicable; we can understand how, for example, in London the spark is kept alight which later sets aflame a "trailing epidemic." Assume each case of influenza at the commencement of an epidemic capable of infecting, say, two fresh cases, and take the incubation period as one-third of a week, then in the first week one, two, and four cases; in the second week eight, 16, and 32, will be attacked, and so on. As, however, larger numbers of those specially exposed (city men, theatre-goers, &c.) are stricken down the rate of increase will necessarily slacken.

Suppose in the maximum week that the numbers attacked, approximately stated, are 240,000, 300,000, and 240,000. We may then interpolate for the weeks between the second and the maximum roughly as follows:—

Third	week,	64,	128,	256
Fourth	,,	500,	960,	1,800
Fifth	,,	3,200,	6,000,	11,000
Sixth	,,	18,000,	30,000,	50,000
Seventh	,,	80,000,	120,000,	180,000
Maximum,		240,000,	300,000,	240,000

In seven weeks upwards of 1,000,000 persons, or, say, 1 in 5 of the population, will have been attacked.

Now the outbreak will take much longer to decline to extinction than it took to rise, for those *specially exposed* have in large part been already attacked and the disease must spread, in the main, among persons whose manner of life brings them comparatively little into contact with their fellows. The multiplier applied to each case has decreased from two to one in seven weeks, but it may take many months to diminish further to an equal extent—i.e., to half. Thus the

[3] History of second attack by measles needs to be accepted with reserve. German measles and scarlet fever, at any rate, are often sources of confusion. The age incidence of measles in large communities and the fact of exemption in communities attacked after an interval of years of those who suffered in a previous outbreak make it clear that the protection is of a lasting character. Brownlee found out of 12,000 cases of measles at Belvidere (Glasgow), 1885–1902. 71 were over the age of thirty; "these 71 were almost without exception persons born in the country who had not passed through measles in early youth." Donald Hood has maintained ("An Enquiry into the Etiology of Röthein") that röthein is but a modified form of measles after all.

central figures of the second, third, &c., weeks are 2, 16, 128, 9·0, 6·00, 30,000, 120,000; each succeeding figure being derived from its predecessor by applying the multipliers 8, 8, 7·5, 6·25, 5, 4·3. We may continue this series of multipliers, stating them quite approximately somewhat as follows: 2·5, 0·5, 0·4, 0·36, 0·33, 0·30, 0·28, 0·27, 0·26, 0·25. The decrease, of course, becomes less and less rapid as time goes on. On this basis each crop of cases will still number over 100 up to the sixteenth week, and there will be an appreciable number of cases in each crop for some weeks later.

A further consideration must be borne in mind. New arrivals susceptible to influenza are continually entering London; there is, moreover, loss of insusceptibility on the part of some of those who have already been attacked. The rate of decrease of the multiplier will clearly slacken and slacken and at length, after several months, may begin again to increase. We see therefore that, in London, influenza may well maintain itself for years, as, indeed, it has done in our own time.

It is important to observe that the capacity for smouldering depends upon the existence of a large population densely aggregated. It may be roughly stated that in London, with its 5,000,000 people, some million cases occur up to the time of maximum prevalence; there are after 13 weeks some 5000 cases a week; and a few cases still occur weekly even after six months. On this basis we see that in a population of, say 5000 persons, the outbreak would have practically terminated after 13 weeks, and be altogether extinct before the end of half a year. In these considerations we may find explanation of the behaviour of influenza in Martinique, Réunion, or the Fiji Islands.

The persistence of form of the London measles wave is not a little remarkable. Growth of population and alterations of its age constitution, varying customs, and social conditions have all left it almost undisturbed. Growth of population might, at first sight, have been expected to exert considerable influence. In island communities measles is introduced, prevails, dies out, and it may be many years before it again gains a hold; in Sweden and in country districts of England the disease presents "multiannual fluctuations"; in large towns it has assumed a biennial type. In London and New York we might expect greater frequency of recurrence still.

Then, again, fluctuations in the birth rate might have been expected to have had more influence. Dr. B. A. Whitelegge has pointed out that there was "a distinct rise and fall in London measles mortality with maxima in the early forties, in the sixties, and in the eighties, over and above the biennial rhythm," and he looked for evidence of altered quality of virus in this connexion. In Sweden and Norway a rise in case mortality accompanied each epidemic; there are no case mortality figures for London but Dr. Whitelegge turned to the more detailed records of certain provincial towns. The most striking of the instances he gives, that of Sunderland in 1885, is, it should be observed, an example of noteworthy change in the birth-rate.[6] A like variation, though a less marked one, occurred in Barnsley just prior to 1891. In a third instance (Hanley, 1888–89) it appears that school influence was operative.

Records of case mortality in measles, when available, are apt to relate to special classes of population and hence the influences exerted by age, social circumstances, &c., incessantly intrude. In the Norse epidemics, as Dr. Whitelegge has observed, the records relate to a few large towns and a number of country districts; it may be that varying degrees of prevalence in town and country, with accompanying age differences, account in some part for the alterations of case mortality observed.[7]

In differences in social circumstances, overcrowding, poverty, lack of proper tendance, &c., there is abundant scope for variations in case mortality. Dr. Whitelegge says: "The case mortality is greatly influenced by surroundings, the severity and fatality being greatest among the poor. The experience of epidemics amongst soldiers in time of war seems to confirm this." He adds a reference to the outbreak in Fiji, in 1874, where "the case mortality was enormous," but says "not only neglect and exposure of the sick but exceptional susceptibility of a population never before invaded by measles had to be taken into account. Whether," he adds, "the destructiveness of the pestilence was to be attributed entirely to this lowered resistance, or whether there was an increased intensity of the contagium—in other words, a true change of type—remains to be proved."

This outbreak, in which it is stated that some 40,000 natives succumbed to attack by measles, is one of the best-attested instances of its kind.[8] Mr. B. G. Corney wrote concerning it: "In considering the reasons why some epidemics of measles should have had a malignant type great stress should, in my opinion, be laid on mistakes in dieting and therapeutic treatment." Again, he says: "Of the native population those classes over whom adequate supervision could be exercised have suffered but slightly."[9]

Davis, writing of an epidemic in Samoa, computes that some 1000 deaths occurred in a population of about 31,500, half of these being in adults. He considers that nine-tenths of the deaths could have been prevented had care been taken. It appears that the Tongans in this outbreak, "with the experience of Fiji," took some precautions, and thus the 15–30 per cent. case mortality of Fiji was reduced to 4 or 5 per cent. and could have been further reduced. What becomes, then, of the special susceptibility of Polynesians?

This question of the attack of virgin communities needs clearing up. If there were such vulnerability, as is alleged, the evidence would be more conclusive. For the most part it relates to remote regions and long past times, and unfavourable conditions—war, famine, neglect, &c.—have always played a prominent part. Hirsch, who strongly holds that "there are, generally speaking, no real differences to be made out in the course which measles runs at the various points of its large area of distribution," lays stress on the influence exerted by "mistakes in dieting and therapeutic treatment." He cites certain cases which, however, it is difficult to accept unreservedly: the 20 per cent. case mortality of 1866 among Confederate troops; the 40 per cent. case mortality in Paris (1870) in the Garde Mobile; that among French troops after the Italian war; and that in the Brazilio-Paraguayan war, when nearly one-fifth of the national army perished, "not from the severity of the disease," for 50 cases treated in private practice recovered, but from "want of shelter and proper food."

In the excitement of campaigning in bygone days diagnosis may not have been precise; certainly the attack of large numbers of adults in a civilised country (30,000 Confederate troops) by measles excites suspicion.[10] However this may be, we have evidence near at hand of the malignity of measles under unhygienic conditions and it would be easy to cite, not from the eighteenth century and from the Amazon, but from insanitary areas close at hand, case mortalities of 15 per cent. Without going so far, then, as to deny alteration of quality in measles altogether, it may be noted as very remarkable, having in view the many circumstances which might be expected to bring about apparent change, that the constancy of type should be so marked. From the measles of 1670 (which, however, it must be admitted was selected for description by Sydenham as "the most perfect disease of this genus") down to the measles of to-day, in whatever part of the world observed, there is a wonderful fixity of character.

On passing now from measles to small-pox we have to note qualifications. While second attacks of small-pox are not so uncommon as was once supposed, account must now also be taken of the disturbing influence of vaccination. It is clear that in pre-vaccination times—as, for example, in Kilmarnock—the behaviour of small-pox, both in age-incidence and periodicity, closely approximated to that of measles at the present day. After vaccination was introduced the inflammable material added year by year included not merely susceptible newcomers, for it becomes necessary to take account also of reversion to susceptibility on the part of persons vaccinated in infancy; moreover, as small-pox prevalence declined the number of those protected by a previous attack of the disease diminished.

The conditions in large centres of population resulted, as is generally recognised, in the production of short period

[6] In the years 1880–84 the births were 5065, 5549, 5913, 6101, and 6347 In London the range in the number of susceptibles has been found to be approximately from 120,000 to 180,000. In Sunderland, approximately one twenty-fifth the size of London, it would be from 4800 to 7200. An alteration in the number of yearly births from 5000 to 6300 would therefore obviously disturb the behaviour of measles very materially.

[7] Taking 14 sparsely populated districts in England and Wales I found (Transactions of the Epidemiological Society, 1897) "during a period of 40 years the deaths from measles, at ages 0–5, constituted only 78 per cent. of the total deaths, whereas in London such deaths constituted between 93 and 94 per cent. of the total deaths." These different mortality rates represent, of course, still greater differences in prevalence at the higher as contrasted with the lower ages.

[8] In an outbreak on the Amazon in 1749 whole tribes are said to have been cut off; similar accounts are forthcoming from Hudson's Bay Territory, 1846; Astoria, 1829; the Cape (among Hottentots), 1852; and Tasmania, 1854 and 1861. (Hirsch.) The Fiji Islands were attacked again in 1903; but the total mortality from "all causes" in that year is said to have been only 2481.

[9] Transactions of the Epidemiological Society, vol. iii.

[10] Typhus fever, septicæmia, &c., may have been in question. Bruce Low (Transactions of the Epidemiological Society, vol. xviii, p. 59) says: "Epidemic cerebro-spinal meningitis was widely spread during the Civil War, attacking the troops, specially the army of the Potomac and in camp near Washington. It was severely felt among the negroes sent by the Confederates to Memphis."

waves, such as those of London in the "fifties" and "sixties,"[11] but these conditions cannot but have had influence in setting up long period waves also and the epidemics of 1837 and of 1871 may conceivably have thus resulted.

Dr. Whitelegge did not find conclusive evidence to show that "the minor epidemics which occurred in London at intervals of four or five years were attended with any temporary increase of severity." In 1871, however, he finds distinct suggestion of greater virulence and of increased power of epidemic diffusion, and he adds: "For several years previously there had been indications of increasing intensity in London—i.e., a tendency to slightly greater destructiveness in each successive minor epidemic." Before accepting altered quality of virus as explanatory of the phenomena there is need for recognising the difficulty of comparing the extent to which the several populations were protected. Further, conditions as regards treatment and isolation of cases have undergone material alteration and it may be noted that practically nothing is known of the possibilities which Mr. W. H. Power's hypothesis of aerial convection opens up; it may be that the case mortality of air-borne small-pox differs from that of other small-pox, and in any event differing modes of spread of the disease give opportunity for small-pox carried in one or another way to affect various classes of the population. Furthermore, in 1870–71 a great European war was in progress and this country was again and again infected from France; it was to new arrivals from Paris on the outbreak of hostilities that the first exacerbation of small-pox in London was clearly traced and the disturbed conditions in Western Europe in the year ensuing no doubt had influence upon small-pox mortality.

A striking contrast is presented in London by the 1901-02 small-pox with case mortalities of 34·6 and 10·3 per cent. and the 1903 small-pox with case mortalities of 5 and 0·29 per cent. in unvaccinated and vaccinated respectively. But the fact needs to be borne in mind that 8000 small-pox attacks and at least 1,000,000 vaccinations and revaccinations had served to augment resistance of the London population between the two outbreaks. It has been suggested that the 1901-02 small-pox came from France and that it was more virulent than that of 1903 which came from America. Evidence as to this is not very precise; the earlier small-pox was undoubtedly, moreover, in numerous instances so mild as to be confused with chicken-pox.

This question of resistance needs to be kept prominently in mind. Cambridge, hard hit in 1870–71 and then subsequently well vaccinated, for many years escaped quite lightly in the recent outbreak. McVail observes that second small-pox "is as a rule so much modified that it has given room for dispute as to what is and what is not small-pox." Stone-pox, water-pox, wind-pox, sheep-pox, swine-pox, horn-pox, and milk-pox were discussed by eighteenth-century writers. McVail concludes that "it may safely be asserted that these names nearly always mean modified small-pox, and that in the great majority of cases the modifying agency was a previous attack of the disease, either by infection or inoculation." He adds, however, that "a curious feature in connection with modified forms of small-pox is that they sometimes became so established in a locality and so fixed in type that they prevailed in epidemics." Scant justice has been done to environment in these matters; the range of case mortality (according to Abbott's table, 0·5 to 12·5 in the vaccinated and 16·1 to 60 in the unvaccinated) is commonly attributed to altered virus, while the age of those attacked, interval between epidemics, and numerous other obviously important considerations are apt to be lost sight of. In some of the very low case mortalities (e.g., that of 0·2 recorded by Vogt from Edinburgh) chicken-pox may, as Simon pointed out, have been in question. Again, the fact that case mortality in small-pox is particularly low in children over two years of age (and this has always been so, as the Aynho figures indicate) explains a good deal of supposed alteration of virulence. Possibly cases are now included which would have been left out of count in days gone by; some of those notified in the London outbreak of 1901–02 presented only some half-dozen or dozen pustules; these were met with in persons protected by previous vaccination, may not similar cases have occurred in persons protected by previous small-pox in the eighteenth century? Again, so much turns upon the date and quality of vaccination, and it is important also that inquiry should be made as to previous attack by small-pox. This last-named question is probably important in connexion with the reported mild small-pox of South Africa (Kaffir "amaas"), India (Punjab), West Indies, Trinidad, &c. From a report my colleague Mr. W. McC. Wanklyn has shown me I gather that the Trinidad small-pox occurred, for the most part, in persons who had either been vaccinated or had previously suffered from small-pox. The broad fact remains that only when the field of view is contracted are anomalous forms of the disease encountered; on a comprehensive survey and when due regard is given to environment and to degree of protection, artificial or natural, small-pox remains remarkably constant in type.

[11] There can be no doubt that the continual influx into London of tramps from the country furnished the main supply of fuel for the flame. Dr. W. Black, writing in 1781, said: "Whatever share of small-pox mortality takes place in London amongst persons turned 20 years of age is almost solely confined to the new annual settlers or recruits who are necessary to repair the waste of London and the majority of whom arrive in the capital from 20-40 years of age." The London children, as the early years of the nineteenth century passed, were to an increasing extent protected by vaccination, but the supplies of new material from the country accumulated year by year until at intervals of four or five years explosions became inevitable.

On turning to variations in quality exhibited in *scarlet fever* and *diphtheria* a preliminary difficulty is the apparent intermingling of the two diseases. There are instances of simultaneous appearance of the two clinical types in the same epidemic and even in members of the same family. Both diseases are milk-borne and the intermingling referred to is especially met with in milk outbreaks. There is the parallelism in behaviour as regards "school influence" and "return case" phenomena, and again there is the relation of both diseases to meteorological conditions and especially to years of drought. The interlacing of the features regarded as typical, of scarlet fever on the one hand and diphtheria on the other, in eighteenth and early nineteenth century literature, finds its counterpart in the confusion of nomenclature which has existed within the period of registration of deaths. Finally, suspicion has been entertained as to bacteriological relationships.

Whether we elect to continue to speak of two closely related diseases, scarlet fever and diphtheria, or of one throat malady, the records yield, as has been seen, clear evidence of long, approximately 30 year, oscillations with minor waves of three or four years' period. Are these the result of change in the organism or in the host and the environment generally?

Dr. Whitelegge cites case-mortality figures as proof of severity of type at times of increased prevalence. The figures are, however, open to interpretation in other ways. The London Fever Hospital statistics show, for example, that at ages 0–5 the case mortality varied not in direct but in inverse correspondence with variations of prevalence, and it is well known that remarkable changes of age distribution of patients admitted to that hospital have occurred at epidemic times.

While urging caution in this matter there can be no question as to the altering character of the disease in the 30-year periods, and if this be admitted it may be argued that it is idle to deny the like possibility in the short-period waves. The point at issue is, Do the changes connote alteration of the virus or merely in the effect produced in the soil? The two diseases faithfully fulfil their periodic times *when a particular population is being kept under observation;* now they are in "non-virulent" phase; in 15 or 20 years' time they may be again in "virulent phase." But the organism may be in one phase in one population and contemporaneously in the other phase in a neighbouring population, for it is an every-day observation that an epidemic losing intensity in one place may in spreading elsewhere show unabated energy. Surely, then, the supposed changes in virulence are really changes in reaction between a parasite and more or less immune hosts; the phenomena of immunity of individuals and of populations after attack clearly suggest this.

A word of explanation is perhaps here necessary. Altered reaction between host and parasite means alteration in the host. Why not also in the parasite? The virulence of an organism is enhanced and attenuated under laboratory conditions by passage through susceptible and insusceptible animals; can it be supposed, therefore, that the sore-throat organism of a community tested in the trough of a wave of multi-annual prevalence would prove identical with one taken at the crest of the wave? The organism doubtless undergoes change, but it must be insignificant in comparison with the epiphenomenal change in the reaction between parasite and host. The fact which stands out as specially remarkable is that this reaction comes back again and again to the point of departure, so that when a long period is passed in review there are cycles upon cycles, it may be, of epiphenomenal variation, but little or no evidence of evolutionary change in the disease organism itself.[12] For examples of this latter we must turn, not to seasonal fluctuations, short period waves and multi-annual fluctuations or nutations, but to

[12] It is comparatively easy to deal with species at first hand, but most difficult to deduce the fixity or variability of a species from observing effects produced by it. Thus Weismann examines instances which "prove that an immigrant species can spread over a new area without immediately varying" (e.g., the sparrow in the United States and the evening primrose in Europe). But consider such a case as that of the introduction of goats in St. Helena. The young trees were devoured as they grew, and with extinction of the forests the indigenous insects and birds of the island were doomed to destruction. It would be absurd, however, to deduce from a changed St. Helena a change of type in the invading goat. Again, Weismann refers to the effect of the introduction of rabbits into Kerguelen land in 1874. The Kerguelen cabbage (Pringlea antiscorbutica), which flourished on the island in 1840, was found, in 1898, to be growing only "upon perpendicular cliffs or upon the islands lying out in the fiords." The face of the island was transformed, but there is no evidence that the rabbit had undergone change of type.

secular mutations, and even then the evidence, as has been seen, is singularly unconvincing. Indeed, in the absence of such evidence we feel that it is not an explanation of change but of persistency of type that is needed. For this we may fall back either upon the phenomena of variation under domestication or under conditions of isolation, with reversion to ancestral characters as soon as free crossing with allied forms comes into play, or, to take another and more promising analogy, we may instance the masterpieces of the florist, produced by grafting or layering, variety following upon variety, and may wonder whether the germs of disease which multiply asexually in the human body may not have sexual developmental phases by which the continuity of the species is preserved.[13]

I have considered now possible explanations of persistency of type and have suggested that in the unstable diseases apparent change of type may result from interplay between the organism and its environment.

Another set of considerations having important bearing upon the question of the origin of disease species remains to be alluded to. Must we assume that small-pox and chicken-pox, measles and German measles, have branched off from a common ancestral stock, just as the different species of hæmamœba, spirochæte, trypanosome, and bacterium have done? Again, where is the line between species and species to be drawn? In dealing with bacteria, for example, are differences in colour reaction, in power of fermenting various sugars, clotting milk, liquefying gelatin, and killing animals to be necessarily regarded as having specific value? This question assumes an acute form when agglutination tests come under consideration, for on application of these the bewildered observer in the field finds that of two cases exposed alike to infection one is taken by the bacteriologist and the other left.[14]

There is perhaps no family of disease organisms which presents more instructive phenomena for study of the criteria for the differentiation of species than the colon group. At the one extreme stands the bacillus coli (Escherich) and its relations, at the other the bacillus typhosus and its various "strains," and intermediate between them there are organisms such as those of dysentery, hog cholera, paratyphoid fever, and the many bacilli associated with meat poisoning.

It is held that certain peculiarities differentiate these closely allied organisms into distinct species and in default of other criteria reliance is placed upon the agglutination test. The serum from a particular meat poisoning outbreak clumps its special bacilius in higher dilutions than other meat-poisoning bacilli; a new designation, *paratyphoid*, is needed to describe a form of disease distinct from typhoid fever; it is also held that there are particular strains or races of typhoid bacilli. On culture media the same story is told; thus, to take one instance only—viz., the breaking-up of certain sugars—the typical bacillus coli (Escherich) ferments lactose but not cane sugar. Given a bacillus which resembles it in all other particulars, but which does not ferment lactose or does so only feebly, or which ferments cane sugar or presents some suggestion that it is capable of doing so in a slight degree, is such an organism to be regarded as bacillus coli (Escherich) or as a distinct species? Again, there are said to be immune bodies in number untold, each specific to its particular toxin; the phenomena of bacteriolysis, hæmolysis, and the rest all need for their explanation these specific "go-betweens"; indeed, according to some authorities the ferments or "complements" which the "go-betweens" annex are also specific. There have not been lacking dissentients who have found it hard to people the blood and tissues, even in imagination, with such myriads of specific bodies. As evidence of the need that has been felt for buttressing the thesis as to their specific nature it may be noted that the attempt has been made to put the matter to a sort of test by showing that (under laboratory conditions) no change from one species to another has occurred. Klein has recovered bacillus coli unchanged from tap water after many days or weeks; McConkey found it retained all its characters unchanged after an exposure of 358 days to what was a changing and unfavourable environment, a result distinctly opposed, as he puts it, to the idea that this bacillus ever becomes atypical. But we need to remember, as Sir William J. Collins has pointed out, that "the possibilities of environment are not exhausted by the confectionery of the laboratory." We need, too, to keep in mind the caution, given in Sheridan's *Critic*, that inability to see the Spanish fleet may be fully explained by the fact that "it is not yet in sight." A recent observation made by Dr. M. H. Gordon is very interesting in this connexion. He worked out "nine reaction tests" for the differentiation of streptococci and then endeavoured to ascertain how far the organisms, behaving in a particular manner, continued to do so after being passed through mice. Nine of 11 streptococci remained unaltered but in two instances an alteration had taken place. "One streptococcus had gained positive reaction for salicin, the other had lost its positive reaction for neutral red."

The question as to the specific character of allied forms of bacilli, immune bodies, &c., will no doubt receive a good deal of further attention in the near future. Certain considerations which may, perhaps, have a bearing on some aspects of the problem under consideration may be here referred to.

In the case of allied forms of bacilli, distinguished one from another by their varying behaviour as "polysaccharide fractors," it becomes necessary to regard each bacillus as having attached to it "enzymes" capable of fermenting the several sugars in question. Reasoning from the analogy of small-pox and vaccinia (which have been quite abruptly converted the one into the other), is it not conceivable that as a result of development under certain conditions (and these not necessarily laboratory conditions) a bacillus may lose an enzyme of one sort or become associated with one of another sort, thus being converted into a changed organism from a sugar-fermenting point of view? On such view of the matter it might be difficult or impossible to imitate in the laboratory the conditions necessary for displacement of the enzyme and a negative experiment such as that with tap-water and bacillus coli may after all be of minimal value.[15]

The conception of the bacillus as a kind of host with attached "enzymes" affords, it may now further be noted, a possible clue to the difficulties arising in connexion with immune bodies, agglutinins and the like. Take first the simple case—an organism with a single attached "enzyme." Introduction into a favourable medium is followed by rapid multiplication, which is by-and-by checked as products of fermentation accumulate and finally ceases; we may regard

[13] This brings us to some such conception as was put forward in Mr. W. H. Power's cholera hypothesis of 1883, a hypothesis which at once serves to explain certain phenomena to which he refers and also to reconcile extreme variations of virulence of the cholera organism, in particular areas and at particular times, with stability of cholera as an endemic and epidemic disease. It is a curious fact that the two water-borne diseases *par excellence*, enteric fever and cholera, have been found to be communicated by shell-fish and fish. The limitation of cholera in recent European experience to river populations and the extraordinary way in which, in 1832, it attacked fishing populations in this country and in Scotland (see Creighton, "History of Epidemics") may be considered in relation with the fact that in its endemic area it affects a population living in boats and feeding to a large extent upon what can be caught in the rivers.

[14] There are signs of rebellion in the bacteriological camp itself. Thus, Lieutenant F. P. Mackie (THE LANCET, Sept. 23rd, 1905, p. 874) quotes authority for the statement that maximum agglutination value may be given by typhoid serum "with bacilli which were shown to have no etiological relation to the disease, and further that the specific agglutination value is not invariably above that of the group agglutination, which indeed cuts at the root of the rationale of the differentiation of paratyphoid and enteric fevers." Lieutenant Mackie boldly adopts the view that auto-intoxication by bacillus coli communis under certain unknown conditions of lowered bodily resistance, culminating in what amounts to transmutation of a saprophyte into a parasite, "explains the whole question." He even speculates on the "resemblance between enteric fever, paratyphoid fever, and dysentery, and the affinities between the Eberth-Gaffky bacillus, the coli communis bacillus, and Shiga's bacillus of dysentery." "It might be shown," he says, "that there is a suggestive gradation between the types, not only in their clinical manifestations, the site and type of the intestinal ulceration, and the degree of septicity of the fever, and so on, but more markedly in the biological gradation from the bacillus at one end of the arc to that at the other end." See also "Paratyphoid and Typhoid Fever," by A. E. Boycott, Journal of Hygiene, January 1906, especially p. 52 as to "irregularity of agglutination results," and the observations of F. W. Andrewes in his recent report on sewer air as to the alleged specific value of chemical tests.

[15] This may perhaps be made more clear by replacing in thought the bacillus by a man and its "enzyme" by a tapeworm. Suppose, then, that question arose as to whether a man harbouring tænia mediocanellata and another man harbouring tænia solium, belonged to the same species. It would scarcely elucidate the matter were some inquirer to cause the first man to drink tap-water for 358 days and then demonstrate that his parasite exhibited the characters of tænia mediocanellata and not those of tænia solium. The result would not dispose of the question as to whether the first man could be infected with tænia solium or the second with tænia mediocanellata. Neither does the tap-water experiment dispose of the possibility that one "enzyme" may replace another in the bacterium.

the enzyme if we choose as in a condition of equilibrium, influenced equally but in opposed directions by two "mass actions"—that exerted by the fermentable substance and that exerted by the fermentation products.[16] Similarly in the analogous highly complex immunisation process a point of equilibrium is, it may be, reached when nutrient materials and excretory products (toxins, &c.) exert equal but opposite "mass actions."

We may, indeed, here find explanation of the aggregation of bacilli in "clumps," for it may be suggested that when the "enzymes" cease to act on the external medium they operate on the germs themselves. A phrase which we may perhaps style a "resting form" of the organism may be thus produced and this "resting form" may constitute a centre of attraction for bacilli. Just as when silk is rubbed upon glass the one is charged with positive, the other with negative, electricity, so the development of "resting forms" may engender chargings of opposite sign on these forms and on the bacilli, and there may thus result groupings of bacilli about the centres of attraction constituted by the presumably ultra-microscopic resting forms.

Thus far for agglutination in the simple case; but now, suppose the bacillus to act as host for multiple "enzymes," each of which may operate upon the blood and tissues of the host. Many fermentations now occur and the "mass-action-equilibrium points" will be reached, some earlier, some later, the blood and tissues "fermenting clear" for enzyme after enzyme, until the last has completed its work. Do the "resting forms" only begin to appear under such conditions when equilibrium is finally attained, or do they gradually accumulate from the moment when the first enzyme has become quiescent? There is here the semblance of a clue for threading the mazes of agglutination phenomena.

Why should not two "meat-poisoning bacilli," for example, while closely approximating to each other in almost all respects, present slight differences as regards their attached enzymes? These differences might find expression upon inoculation of bacillus A and bacillus B respectively in the development of differing agglutinating properties of sera of the immunised animals. A serum which has reached "mass-action-equilibrium point" for bacillus A has presumably not yet attained to that point for bacillus B, and therefore serum A will not clump bacillus B in the high dilutions which it clumps bacillus A; but serum A may, in so far as the properties which are all important are concerned, approximate closely enough to serum B to clump bacillus B in moderate dilutions and may have clumping capacity for bacillus B distinctly greater than it has for, say, bacillus typhosus. In some such tentative hypothesis as this may be found explanation of the "specific" relationship between serum and bacillus.

Whether this method of looking at specific agglutination phenomena be regarded as possessing interest or not there remains the possibility that in connexion with the attainment to "mass-action-equilibrium point" an unrecognised phase of parasitic existence may be evolved. In this unknown phase the organism may or may not fix stains, pass through filters, withstand a temperature of 70° C.—there is no reason for assuming it will comport itself as does the familar bacillus in the respects named.[17]

This digression has been necessary in order to "clear the air" with regard to the question of specificity. If orthodox doctrine be accepted the name of distinct species in the colon group is legion and the stability of each, so far as the individual bacteriologist is concerned, practically unassailable. On the other hand, if it be assumed that a particular colon bacillus may live and develop "symbiotically," so to speak, with one or more enzymes, which under certain conditions may be replaced by others, we then clearly have to hand, in the permutations and combinations of a limited number of enzymes, scope for comprehending in conception a very large number of nearly related organisms. If it should be possible thus to reduce, for example, the whole meat-poisoning tribe to two or three bacilli, in varied association with some half-dozen enzymes, the simplification introduced would be great and it would at least be no longer necessary to crowd the blood and tissues with standing armies of specific bodies.

It may perhaps be said that whether we postulate on the one hand 1000 species of bacillus coli and its allies or on the other quite a limited number of species having in varied combination some five or six associated "enzymes" the difference is fundamentally one of terminology only. Yet this is not so. From the latter point of view our conceptions with regard to certain phenomena in the life-history of the organism are greatly simplified, while at the same time the bacillus, considered from an evolutionary standpoint, is endowed with a stability far transcending that which it possesses on the former hypothesis. The assumption that fermenting property can suddenly be gained runs counter, it is true, to current opinion. The bacteriologist has to admit that such powers may be lost—this is an everyday laboratory experience—but he is reluctant to agree that they may be newly acquired. A doctrine which carries with it some limitation upon the present-day demands of the founders of new bacteriological species at least possesses this in its favour, that it furnishes a simple explanation of the behaviour of epidemics as ascertained from records of disease.

The bacteriologist who claims that the most minute differences are inseparably connected with and distinguish species of bacilli throughout long ages must reckon with the fact that the more numerous the species the greater must have been the ability to vary from an original stock—the whole question is, indeed, not one as to ability to vary, but as to the number of stable forms and the distances which separate positions of equilibrium one from another.

Much that has been said of varieties of bacillus coli holds good of streptococci. Furthermore, just as various *strains* of these organisms may be assumed to be converted, at a stroke, one into another by a change of "enzyme," so it may be that supposed specific forms stand in a like close relationship. The doctrine may find application, for example, in connexion with tubercle bacilli of bovine and human origin, or, going still further afield, some difference, in the parasites associated with a parasite, may be expected to yield explanation of the association between small-pox and vaccinia, scarlet fever and diphtheria, dengue and influenza, enteric fever and dysentery, or typhus and relapsing fever. We may even conjecture that immunity, in some instances, may mean that the parasite has been harnessed to some other parasite or enzyme which robs it of its former virulence. Here, of course, we must not lose sight of the fact that the particular organism the bacteriologist has drawn attention to may itself be a mere subparasite, capable of living symbiotically with the parasite in chief. Thus the influenza organism may at one time live in association with Pfeiffer's bacillus, at another with the micrococcus catarrhalis, and so on. Or the throat distemper organism may live in association now with the diphtheria bacillus and now with the streptococcus conglomeratus.

A particular organism may conceivably cause more than one disease in man by being introduced by different intermediary hosts; and again distinct diseases may result in man when the organism causing the disease is accompanied by different enzymes or subparasites temporarily associated with it. With regard to the former suggestion, it must be borne in mind, however, that only particular species of Anopheles can communicate malaria, nearly allied forms being unable to do so, and thus the organism, which only

[16] That there is justification for such a view of the matter will be seen on reference to certain phenomena in fermentation and agglutination processes. Yeast fermentation proceeds until there comes a time when "the resulting alcohol is injurious to further action" (Newman) on the part of the yeast. Charrin and Roger in 1889 found that "when the bacillus pyocyaneus was grown in the serum of an animal immunised against this organism the growth formed a deposit at the foot of the vessel, whereas a growth in normal serum produced a uniform turbidity." Again Grüber and Durham in investigating Pfeiffer's reaction "found that when a small quantity of the serum of an animal highly immunised against a particular motile organism (cholera vibrio, typhoid bacillus, &c.) is added to an emulsion of the organisms the latter lose their motility and become agglutinated into clumps" (Muir and Ritchie's Manual of Bacteriology).

[17] The hypothesis that some such unknown phase exists may serve to explain certain phenomena which have been observed, such, for example, as the infectivity of milk in which the tubercle bacillus cannot be demonstrated by microscopical examination, or again the results obtained by Houston with regard to the virulence on inoculation in guinea-pigs "of broth cultures incubated with minute amounts of human fæces, while broth cultures of bacillus coli isolated from parallel amounts of the same material, were commonly either non-pathogenic or at all events not virulent." A possible misconception with regard to the suggestions made above may be guarded against. The hypothesis put forward is not to the effect that the bacilli are necessarily all made to yield the unknown phase at one point of time, the moment of attainment of "mass-action-equilibrium." The conception would rather be that the tendency to development of the unknown phase is at its maximum and that certain bacilli readily produce it then, though others (for example, young freshly split bacilli) may still be obdurate in this respect.

possesses ability to develop in one species of insect host, stands in marked contrast to the anthrax or the tubercle bacillus, which can affect animals of differing species; it may be that in species in which the sexual phase of development is thus restricted the mere asexual cycle can be completed in numerous hosts. The second suggestion may be further considered from various points of view. Thus there is the fact, if it be one, that protection may be renewed and maintained by repeated exposure. The nurse and medical man conceivably owe immunity to their ability to attach to invading organisms some enzyme which renders development in the human body a cause not of disease but of renewal of protection against disease. Again, the occurrence of mild cases of typhus fever or of dengue or influenza (during inter-epidemic periods) readily fits in with an hypothesis of association of the dominating organism of the disease with some attenuating subparasite. Just as chemical atoms combine to form molecules and molecules to form compounds, so may subparasites be combined with parasites and these again with higher parasites. Dean Swift, after pointing out that Hobbes has proved "every creature lives in a state of war by nature," goes on to relate how naturalists—

> "Observe a flea
> Has smaller fleas that on him prey;
> And these have smaller still to bite 'em;
> And so proceed *ad infinitum*."

In modern bacteriological theories of disease we may have concentrated attention too exclusively upon particular links in the chain of parasitism—in other words, we have studied the parasites which develop under laboratory conditions and have held disease to be bound up with them, forgetting that a particular parasite may be merely one of a series, and that it may in some cases be replaced in that series by another parasite, and then for the time being, and in the locality in question, cease to have any concern with disease at all. The records of epidemics suggest that some such explanation must be looked for to reconcile the extraordinary persistency of disease types with the no less remarkable variability of the organisms to which the bacteriologist attaches importance as causes of disease.

The Hunterian Lectures

ON

PHLEBITIS AND THROMBOSIS.

Delivered before the Royal College of Surgeons of England on March 5th, 7th, and 9th, 1906.

BY WARRINGTON HAWARD, F.R.C.S. ENG.,

HUNTERIAN PROFESSOR OF SURGERY AND PATHOLOGY IN THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL; PRESIDENT OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

LECTURE III.[1]

Delivered on March 9th.

MR. PRESIDENT AND GENTLEMEN,—Simple non-infective *thrombosis of the cerebral sinuses* is met with chiefly in overworked chlorotic young women, in children who have suffered with long-continued diarrhœa, and in conditions of exhaustion such as ensue towards the end of fevers. It may also be the result of injury.[2] It commences most often in the longitudinal sinus and gives rise to much cerebral congestion with minute hæmorrhagic extravasations into the brain substance and fluid distension of the ventricles. There may also be optic neuritis. The symptoms are severe headache, drowsiness, vomiting, convulsions, and paralysis. These may subside and end in complete recovery or they may go on to coma and death.[3] I have seen an instance in a boy recovering from scarlet fever in whom besides convulsions and coma there was protrusion of the globe of the eye, chemosis, and almost complete interference with ocular movement, presumably due to thrombosis of the cavernous and petrosal sinuses. In spite of these serious symptoms the boy recovered.

In infective cerebral thrombosis there will be added to the symptoms described the rigors, sweating, and irregular temperature significant of pyæmia. Dr. G. Newton Pitt in the Gulstonian lectures delivered before the Royal College of Physicians in 1890[4] gives a most valuable analysis of 44 cases of sinus thrombosis.

—	Primary.	Secondary. Ear disease.	Secondary. Other causes.	Total.
Longitudinal sinus	5	4	3	12
Lateral sinus	5	22	9	36
Cerebral veins	5	1	1	7
Cavernous sinus	—	1	3	4
Circular ,, ...	—	1	1	2
Inferior petrosal	—	1	1	2
Superior ,, ...	—	2	—	2

Primary thrombosis occurs, Dr. Pitt points out, in cases "with a feeble cerebral circulation, associated with exhausting diseases." "In this form, owing to the stagnation of the circulation, clotting tends to take place in the sinuses; the clot becomes adherent but seldom infects the blood or gives rise to emboli."

Secondary thrombosis occurs in connexion with adjacent diseases, chiefly of the ear. Of 36 cases 22 were due to ear disease and in 11 of these the clotting spread to the jugular vein. In the majority of the cases the symptoms were mainly those of pyæmia, three-quarters of them dying from pulmonary infection. "Of the remaining cases seven were traumatic, three had spread from malignant pustules or carbuncles on the face, two from an adjacent pachymeningitis, one from compression by a growth, and only one from a distant source—namely, from pyæmia set up by a carbuncle on the back." Dr. A. Brayton Ball[5] has published an interesting contribution to this subject in which he makes a similar division of cases of intracranial venous thrombosis into two classes presenting marked differences in their etiology and symptomatology. He attributes secondary thrombosis either to the propagation of a phlebitis or to the direct prolongation of a thrombus having origin in otitis media, in disease of the cranial bones, in septic wounds, and carbuncular or erysipelatous inflammation of the face and head. Primary thrombosis he connects chiefly with debilitating illness and enfeebled circulation and he draws especial attention to the cases occurring in anæmic and chlorotic girls without any preceding symptoms. Dr. Ball quotes a number of illustrative cases which exhibit the variety and mobility of the symptoms and he points out that "apart from the fact that these symptoms often show a mobility that is uncommon in most cerebral affections, there is nothing distinctive in their character. The diagnosis in this class of cases, when possible at all, must be made from the association of anomalous cerebral symptoms with the anæmic state, from evidence in external veins of backward pressure from the intracranial venous circulation, and from the occurrence of thrombosis in other parts of the body, particularly the internal jugular or the veins of the upper or lower limbs."

Thrombosis of the mesenteric veins is most often associated with intestinal ulceration. When it occurs in connexion with peripheral thrombosis the onset is usually sudden and the symptoms severe. Vomiting, rapid intestinal distension, griping pain, and intestinal paralysis are the chief symptoms, leading often to rapid death.

I have seen a case in which, during the course of a femoral phlebitis, there were symptoms indicative of

[1] Lectures I. and II. were published in THE LANCET of March 10th, 1906, p. 645.

[2] Mr. Arbuthnot Lane has recorded a case of thrombosis of the longitudinal sinus after fracture of the parietal bone, there being no discoverable injury of the sinus. Transactions of the Clinical Society, vol. xxiii., p. 219.

[3] Professor Humphry, in the Thesis alluded to, gives an admirable description of such a case, with the post-mortem examination. Op. cit., p. 32. Dr. J. W. Ogle recorded a case of thrombosis of the cerebral veins and sinuses in a woman who died exhausted by rectal disease, in whom the symptoms were only those of exhaustion until a short time before death, when there was loss of the power of speech, the mind remaining unaffected. Transactions of the Pathological Society, vol. vi., p. 31.

[4] THE LANCET, April 19th, 1890, p. 843.

[5] Transactions of the Association of American Physicians, vol. iv., p. 52. Thrombosis of Cerebral Sinuses and Veins, by Dr. A. Brayton Ball, with a bibliography of the subject.

thrombosis of a gastric vein. The patient was suddenly attacked with vomiting, followed by great gastric and intestinal distension, dyspnœa, and severe pain in the upper part of the abdomen. The distension gradually diminished, but from the moment of the attack there were complete anorexia and an absolute cessation of salivary secretion. The digestive function was for a time in almost complete abeyance, only very small quantities of peptonised fluid food could be taken; and if the fluid entered the stomach when the patient was lying on the left side acute pain was felt which at once subsided if the patient was turned on to the right side. The suppression of salivary secretion and consequent dryness of the mouth led to the collection and decomposition of pharyngeal mucus which, in spite of the frequent use of antiseptic washes, caused great distress. After passing through a period of great exhaustion the patient ultimately recovered. Dr. H D. Rolleston has recorded in the Transactions of the Pathological Society[6] a case in which there was thrombosis of the superior and inferior mesenteric veins, of the left internal and external iliac veins, and of the splenic vein of a man who died after profuse diarrhœa and hæmatemesis and in whom there was ulceration of the vermiform appendix. Dr. Hilton Fagge[7] described a case of acute thrombosis of the superior mesenteric and portal veins with rapidly fatal collapse. A woman, aged 34 years, had thrombosis of both femoral veins 16 days after confinement. On the thirty-sixth day she was attacked with violent pain in the abdomen and vomiting. Collapse rapidly succeeded, "the eyes were sunken, pulse almost imperceptible, pain coming on in paroxysms but never completely intermitting, severe retching, and frequent vomiting of a rather viscid blood-stained liquid in small quantity." She was perfectly conscious till death, 11 hours from the onset of the attack.

Thrombosis of the portal vein may arise by extension from a mesenteric vein or from gastric or intestinal disease; it may be due to pressure by tumours or by the interstitial growth of cirrhosis or syphilis; and it may depend upon disease, degeneration, or injury of the coats of the vein. The symptoms will depend upon the rate at which the thrombus is formed. When the thrombus is acute, ascites is rapidly developed (the fluid quickly re-accumulating after tapping), and there may be hæmatemesis, intestinal hæmorrhage, and other evidences of portal obstruction. If the patient survives a notable development and dilatation of the superficial veins of the abdominal wall become apparent. If the process is gradual there may be few or no characteristic symptoms. Professor W. Osler[8] has described the case of a man, aged 62 years, who died two days after admission into hospital suffering from ascites and hæmatemesis. Post mortem the liver was found to be in a state of advanced cirrhosis and contained a large infarct. "The portal vein presented a soft brown thrombus, occupying the upper part of the trunk but not completely obliterating it; the branches passing to the right lobe had closely adhering light brown thrombi: that passing to the antero-lateral region, where the infarct was situated, was filled with a firm, solid, partially laminated clot, evidently formed some time before death." In this case Professor Osler points out that the rare condition of infarction of the liver probably depended upon the cirrhosis and consequent obliteration of many of the branches of the hepatic artery.

In contrast with this Professor Osler has related[9] the case of a man, aged 28 years, in whom there had been for years complete obliteration of the portal vein. The collateral circulation was, however, so fully compensatory that there was no material interference with the functions of the organs. There were extensive communications between the gastric and œsophageal veins, and through the latter with the azygos and lower intercostal veins and those of the diaphragm, all of which were greatly enlarged.

Professor Welch[10] has recorded a case in which there seemed good reason to attribute the formation of a portal thrombus to a blow on the abdomen. The case is one to be borne in mind in regard to abdominal injuries. "A lad who had received a severe blow in the abdomen was admitted into Belle Vue Hospital with extreme ascites which had come on within two weeks after the injury. He was repeatedly tapped, the clear fluid re-accumulating at first with great rapidity after each tapping, afterwards more slowly, until in the course of months there was complete recovery. In the meantime enlarged veins made their appearance over the upper part of the abdomen."

The enlarged veins constituting *venous hæmorrhoids*] are very prone to become thrombosed, especially when protruded through the sphincter. The clot herein is liable to the invasion of micro-organisms, and the extension of this septic clot frequently leads to suppuration and thus to the formation of ischio-rectal abscess. I have several times traced the thrombosed vein from an inflamed hæmorrhoid into the ischio-rectal cellular tissue to the spot where suppuration has occurred, and I am sure that this is a not uncommon mode of origin of ischio-rectal abscess.

Thrombosis of the renal veins may be primary and marantic, or may be the consequence of extension from the vena cava; it may also depend upon disease of the kidney and upon the pressure of neighbouring tumours. When of gradual occurrence the symptoms may be few and indistinguishable, and the collateral circulation may be sufficiently developed for complete recovery. When of sudden onset it is manifested by the appearance of blood or albumen in the urine, and may be rapidly fatal. Dr. W. M. Ord[11] recorded the case of a boy, aged one year, who was recovering from scarlet fever, and who was suddenly seized with abdominal pain and vomiting, rapidly succeeded by collapse and death in four hours. Post mortem the left kidney was swollen and of dark purple colour, and under the microscope showed great engorgement of its vessels with numerous small extravasations, but there were no signs of interstitial nephritis. There was thrombosis of the renal vein extending into, but not occluding, the vena cava. Dr. Theodore Fisher[12] has published the case of a girl, aged 13 years, who had been the subject of old hip disease and who was admitted into the Bristol Royal Infirmary on account of general œdema of three weeks' duration. There was no history of scarlet fever. The urine contained 3 per cent. of albumin, some blood, and granular casts. The quantity of urine passed varied between 15 and 46 ounces in the 24 hours during the first week. It then diminished rapidly to only 12 ounces the day before death, which occurred 11 days after admission. Post mortem the kidneys were enlarged and the cortex was swollen, pale yellow, and opaque. There was thrombosis of both renal veins and of the vena cava and also of the pulmonary arteries. The clot in the renal veins was becoming organised and that in the pulmonary artery was channelled. Beckman[13] states that thrombosis of the renal veins is no uncommon occurrence in infants dying with profuse diarrhœa and atrophy. He has examined ten cases carefully. The left renal vein was the one most often affected; in a few cases the thrombus extended into and obstructed the inferior cava. The coagula were mostly dark red and loosely adherent to the walls of the vessels. No blood in the urine or other symptoms seem to have been observed during life.

Thrombosis of the splenic vein is usually due to extension from the vena cava; it may be associated with thrombosis of other abdominal veins, as in Dr. Rolleston's case already alluded to;[14] or it may be the consequence of suppuration or cancerous disease of the pancreas, and it may be caused by degeneration of the walls of the splenic vein. As the process is seldom confined to the splenic vein there are no characteristic symptoms excepting, perhaps, a rapid swelling of the spleen.

Thrombosis of the prostatic veins would seem from post-mortem evidence to be not very rare and may perhaps be the result in some cases of a past prostatitis. It is probably also in some cases the first step in the causation of prostatic abscess.

Thrombosis in the corpus cavernosum of the penis is occasionally met with but is not very common. It is usually associated with the gouty constitution but I have seen a case in which no such connexion could be traced. Sir Prescott Hewett[15] recorded two cases of thrombosis of the corpus cavernosum in men, aged 65 and 58 years respectively, both

[6] Transactions of the Pathological Society, vol. xliii., p. 49.
[7] Ibid., vol. xxxvii., p. 124.
[8] Transactions of the Association of American Physicians, 1887, p. 157.
[9] Journal of Anatomy and Physiology, London, 1882, p. 208.
[10] Allbutt's System of Medicine, vol. vi., p. 220.
[11] Transactions of the Pathological Society of London, vol. xlvi., p. 39.
[12] Ibid., vol. xlvii., p. 113.
[13] Year Book of Medicine and Surgery, 1860, New Sydenham Society, p. 203.
[14] Transactions of the Pathological Society of London, vol. xliii., p. 49.
[15] Transactions of the Clinical Society of London, vol. vi., p. 40.

gouty. In one case there was a single, hard, painless nodule; in the second case there were four nodules, three on the left and one on the right side, "varying in size from a pea to that of a French bean, they were perfectly circumscribed, hard to the touch, knot-like, and painless when handled." The nodules all gradually diminished and in two years two of them had disappeared, no treatment having been adopted. Sir Dyce Duckworth[16] has recorded a case of painful priapism due to thrombosis of the corpus cavernosum which occurred in a man, aged 42 years, during a distinct attack of acute gout. The condition persisted for three weeks and gradually disappeared. Sir Dyce Duckworth[17] also quotes two similar cases, one in a very gouty man, aged 45 years, in which the condition lasted three weeks, and a second in a man, aged 60 years, also gouty and in whom a second attack occurred after a year's interval.

The treatment of a case of simple non-infective phlebitis or thrombosis consists chiefly in the enforcement of complete rest. The point to be kept in mind is the importance of taking every possible precaution against the detachment of clot. This is the chief danger, especially when the larger venous trunks are involved, and it belongs to the slight as well as to the severe cases. The patient must be at once, and rigidly, confined to bed and must avoid all exertion. Especially must he be warned against any straining effort, as, for instance, in defæcation. The bowels therefore must be kept acting easily by gentle laxatives and, of course, the bed-pan must be used. The neglect of this precaution has led to many disastrous results. If there be troublesome cough laryngeal sedatives must be used and easy expectoration promoted so as to avoid the disturbance and effort which cough involves. In gouty phlebitis the amount of solid food should be diminished but distilled water should be taken freely (two or three pints in the 24 hours); this should be mixed with a carminative (as ginger) as care should be taken to avoid flatulence, for any distension of the abdominal viscera is a serious embarrassment to the circulation. An occasional dose of calomel is usually beneficial.

I have already alluded to Professor Wright's[18] observation showing that the administration of citric acid is followed by a decalcification of the blood and a corresponding diminution of its coagulability. Dr. C. J. Nepean Longridge has kindly furnished me with some observations upon lying-in women to the same effect. He also found that by taking citric acid the coagulation time of his own blood was increased from 2 minutes 45 seconds to 3 minutes 35 seconds without any change of diet. I think, therefore, that citric acid should certainly be given for the treatment of thrombosis as well as for its prevention in conditions in which that danger is likely to occur. Having in mind also the difficulty of certainly excluding the possibility of an infective origin and of separating clinically the infective and non-infective cases I hold that it is wise to give quinine in moderate doses. It also seems to me that Professor Wright's[19] suggestion as to decalcifying the milk by the addition of citrate of soda should be adopted whenever large quantities of milk are given to patients prone to thrombosis. The same author has also proved experimentally[20] that the coagulability of the blood is diminished by ingestion of alcohol, by drinking large quantities of fluid, and by reducing the supply of food. The diet should be light and easily digestible and may perhaps with advantage include some alcohol. Tobacco smoking would seem to be harmless or perhaps even beneficial.

Dr. B. W. Richardson[21] made a great number of experiments on the blood of a gentleman who was addicted to constant smoking. He observed that in the morning after rising, and before smoking, the blood coagulated in two minutes with moderate firmness and the corpuscles were generally natural in shape. "When two or three pipes had been smoked a distinct change occurred in the blood; it retained its brightness, but flowed freely and coagulated slowly and feebly. After a long day of smoking—from 15 to 25 pipes having been taken—the blood, though still retaining its bright colour, flowed much more readily and would sometimes refuse to coagulate altogether. Left for a time in the cup of a microscope-glass, it would thicken from a sort of drying process, but would not healthily coagulate." Under the microscope the red corpuscles showed some irregularity of shape and did not form rouleaux. After a night's rest the blood resumed its normal condition. Dr. Richardson also observed that the blood of jaundiced persons coagulated slowly and feebly. He also found that the administration of ammonia caused similar changes in the corpuscles and a decrease in the coagulability of the blood.

It will be seen that the coagulability of the blood is increased by:—	The coagulation of the blood is diminished by:—
Carbonic acid.	Oxygen.
Lime salts (calcium chloride, calcium lactate.)	Alcohol.
Milk.	Restriction of food.
Magnesium carbonate.	Diminution of lime salts.
Restriction of fluid.	Large quantities of fluid.
	Citric acid.
	Rhubarb.
	Acid fruit juices.
	Acid wines.
	Tobacco smoking.

The treatment must, however, of course be modified to meet the special conditions of those in whom the phlebitis is a complication of other serious diseases, as, for instance, in chlorosis, influenza, and enteric fever. I do not think that in any case depletion is desirable. The local measures should be directed to relieving pain and insuring rest to the affected limb. For the relief of pain nothing is so effectual as the application of heat; and as it is most important to disturb the limb as little as possible it is best to use dry heat. Thin flannel bags filled with bran and heated in an oven are convenient for this purpose; they are light and retain heat for a considerable time. When only a small portion of vein is involved a hot lead and opium lotion or a fomentation of boric lint covered by jaconet is comfortable but the extensive use of wet applications is inconvenient and involves frequent disturbance. When pain is not severe the most comfortable dressing is a layer of Gamgee tissue secured round the limb by a many-tailed bandage, the skin having been first dusted over with powdered boric acid. If the inflamed vein is superficial and tender it is well to paint along the line of redness a thick lotion of oxide of zinc, glycerine, and carbolic acid in water. I have never seen the least advantage from the application of belladonna which, though often recommended, seems to me to be disagreeable and useless. When the veins of the upper limb are affected the arm should be extended upon a pillow raised slightly above the level of the body and away from the side. It is best secured

FIG. 5.

Femoral vein. Infective phlebitis. Showing great thickening of coats of vein and disintegrating clot.

[16] Ibid., vol. xxv., p. 97.
[17] Ibid., p. 100.
[18] Brit. Med. Jour., July 14th, 1894, p. 57, and THE LANCET, Oct. 14th, 1905, p. 1096.
[19] Transactions of the Royal Medical and Chirurgical Society, vol. lxxxvi., p. 1. See also THE LANCET, July 22nd, 1893, p. 194, Dr. A. E. Wright on the Advantages of Decalcified Milk in the Feeding of Infants and Invalids; and Dr. F. J. Poynton on the same in THE LANCET, August 13th, 1904, p. 433.
[20] Transactions of the Pathological Society of London, vol. li., 1900, p. 298.
[21] The Cause of the Coagulation of the Blood, by B. W. Richardson, M.D., 1858, p. 101.

by wrapping a second pillow partially round the limb and fixing it by two or three separate strips of wide bandage. In this way sudden movements in sleep or otherwise are prevented. A similar arrangement can be adapted to the leg or a well-padded splint may be applied and the limb slung from a cradle.

I wish now to consider some of the more remote effects of phlebitis, for it seems to me that too little attention has been paid to conditions upon the management of which will often depend much of the future comfort and activity of the patient. After a severe attack of phlebitis, especially if the large venous trunks have been involved, some of the affected veins will probably be left more or less obstructed. The lumen of the vein may be completely filled by blood clot which, becoming gradually organised, obliterates the canal and converts the vein into a solid cord, or the clot may be tunnelled and a channel for the blood remain either through the thrombus or between it and the wall of the vein. In non-infective phlebitis or thrombosis the outer coat of the vein is not materially thickened and the diminished lumen of the vessel depends upon the organisation and contraction of the adherent clot. (Fig. 6) But in phlebitis originating

FIG. 6.

Thrombosis of femoral vein but no thickening of venous coats.

in an infecting focus or wound the outer coat is often much infiltrated and may be left permanently thickened and indurated. In this way and by subsequent contraction the lumen of the vessel is encroached upon and much diminished, and this may be still further narrowed by the addition of organised clot from within. (Fig. 5)

When a main venous trunk, such as the femoral or iliac, is permanently blocked certain changes result in the limb concerned. I will take as an example a case in which the femoral and external iliac veins are obliterated. At first, whenever the limb is dependent or the upright posture is assumed the veins both superficial and deep become full, the limb becomes painful, tense, and somewhat swollen, and a sense of constriction is felt at the groin and in the popliteal space. The skin presents a dusky, congested appearance, the muscular power is diminished, and after walking a short distance severe aching pains occur which make a rest imperative. If the patient is now placed recumbent and the limb elevated the veins gradually become less full, the skin recovers its normal colour, and the pain subsides, but the limb remains somewhat larger and firmer than its healthy fellow, and the contraction of the superficial muscles is less easily seen. The collateral venous circulation begins to develop almost immediately upon the blocking of the main trunk and in the course of a month or six weeks some enlargement of the superficial veins at the groin and lower part of the abdominal wall becomes manifest (superficial epigastric, superficial circumflex iliac, external pudic, &c.); this goes on gradually increasing until the veins attain an enormous size and a number of tortuous veins half an inch or more in diameter extend over the groin and abdominal surface.

At the same time the deep communicating veins are enlarging, and as the collateral circulation becomes developed the upright posture causes less congestion and swelling, walking is less painful, and the limb recovers more quickly when rested. But the enlarged superficial veins, although assisting the return of the venous blood, are themselves the cause of much local discomfort; their distension gives rise to painful aching and their prominence and lack of support render them liable to injury. It is therefore desirable in all cases in which a main venous trunk is blocked to favour as far as possible the development of the deep collateral vessels and to prevent the excessive enlargement of the superficial veins. It will be remembered that the return of the blood through the deep veins is assisted by muscular contraction, which has but little effect upon the veins of the surface, and that the deep veins having the support and protection of the tissues among which they are placed do not become easily over-distended or varicose and are not liable to injury. Evidently, therefore, it is to be desired that the collateral circulation should depend as much as possible upon the deep veins and as little as possible upon those of the surface. This is, I think, a matter of considerable importance in the management of such cases and a good deal can be done in the direction indicated. In the first place, it is necessary to decide at what period the use of the limb may safely be attempted. This requires careful consideration, for while, on the one hand, there is the danger of displacement of clot if the limb is used too soon, on the other hand the functional activity of the muscles is the best aid towards the development of the deep collateral veins. Pulmonary embolism is not common after the sixth week from the formation of a thrombus, although instances have been recorded of the detachment of a clot by a blow or pressure at later periods. There are great variations in the time required for the organisation of thrombi. It must be borne in mind that this process is really the invasion of the thrombus by active cells and new vessels and the gradual replacement of the blood clot by connective tissue. This change needs for its favourable progress the functional activity of the venous wall and is inevitable delayed by the presence of septic organisms. In simple non-infective cases evidence of commencing organisation may be found in a thrombus at the end of a week, whereas in veins the walls of which have undergone degeneration very little change may have occurred at the end of a month.

In an uncomplicated case of phlebitis it will probably be safe at the end of six weeks from the last extension of the thrombus to commence some movement of the limb, but this should not be permitted so long as there is any tenderness over the vein, for tenderness implies the possibility of further extension of thrombus; moreover, the first movements should, of course, be made with great gentleness and caution. In cases of septic origin and also in cases in which there is disease or degeneration of the veins a longer time should be allowed before movement. The organisation of thrombus in varicose veins is usually very slow and when thrombosis occurs in cysts and tortuous dilatations, especially in veins near the knee or in the long saphenous in the thigh, the safest course is to ligature the vein and excise the thrombosed portion. When in an uncomplicated case of phlebitis the clot has undergone early and rapid disintegration and the blood current through the vein can be felt to be re-established movement may be allowed at an earlier period and may be cautiously commenced when the vein is entirely free from pain and tenderness.

When a large trunk, such as the femoral or iliac vein, becomes permanently blocked many small superficial veins become developed which not infrequently become inflamed in consequence of some local irritation. A little tenderness is felt on some part of the skin and on careful inspection a narrow branching line of slight redness is seen, under which is felt the soft cord of a minute blocked vein. If the limb is kept quiet for a few days and the tender vein covered with a warm lotion of boric acid or lead or painted over with oxide of zinc lotion the little vein usually soon becomes again pervious, the tenderness and redness subside, and the trouble is at an end, but if the condition is neglected the phlebitis may spread to larger veins or other small branches may become involved and a troublesome area of inflamed skin is left, causing much irritation and annoyance. When the patient first begins to walk a soft elastic bandage should be gently applied from the foot to the groin and carried in a figure-of-8 round the iliac region of the abdomen, the skin having first been dusted with powdered boric acid. The

upright posture should be maintained only for a very short time at first; a walk of about ten minutes will cause the limb to become painfully congested and necessitate a rest in the recumbent posture with the limb well raised. Standing should be as much as possible avoided, but the exercise of the muscles should be gradually increased. If all goes well, and if the blocked vein is quite free from tenderness, massage may be commenced after about three months. This should consist of gentle rubbing in an upward direction, the actual course of the blocked vein being avoided, and the limb dusted freely with boric acid. It should be done in the evening and no exercise should be taken afterwards. The foot of the bed should be raised on blocks six or eight inches in height. As more use of the limb becomes possible it will be best to substitute for the bandage a well-fitting elastic stocking. If the femoral vein is blocked this should be in two pieces, the lower reaching from the foot to just below the knee, the thigh-piece from below the knee to the fold of the groin with a peak ending in a strap for attachment to braces. If the obstruction extends above Poupart's ligament to the iliac veins or the vena cava a combined thigh-piece and abdominal belt should be worn; and this should be adopted from the beginning, so as to prevent as far as possible the enormous dilatation of the superficial collateral veins at the groin and iliac region which will otherwise take place. Probably no care will prevent considerable enlargement of these veins, and a graduated pad should be introduced into the belt when the enlargement becomes apparent. But whichever part of the venous trunk is obstructed it is a mistake to delay the application of the elastic support until the superficial veins begin to dilate; every effort should be made from the first to encourage the return of the blood by the deeper branches. In most cases the thigh pieces can be discarded after four or five years, but in some instances the great development of the collateral veins of the iliac region necessitates continued support and protection.

Great care should be taken to avoid all constriction of the limb. Elastic stockings are often made with a tight band at the upper limit which acts like a garter; this is harmful and unnecessary, for if the stocking is made to measure and fits well it will keep in place without any such addition. The patient should be instructed to take every opportunity of keeping the limb raised, especially towards the end of the day; exercise should be taken in the early part of the day; hard seats, especially chairs with a hard rim at the front of the seat, should be avoided and a footstool used so as to slightly raise the front of the thigh from the chair. It is astonishing how slight an amount of pressure will obstruct the venous circulation, especially where it depends largely upon the superficial veins; the weight of the arm resting upon the thigh, the weight of the leg if crossed over the opposite limb, is sufficient to seriously impede the venous return. Towards the end of the day, especially if there has been much standing, the limb will become somewhat swollen, heavy, and congested, and this is often accompanied by a good deal of aching, itching, and discomfort. The best remedy for this is a thoroughly hot bath, followed by gentle massage with the limb raised.

Among the remoter troubles resulting from blocked crural veins is the development of a plexus of small tortuous veins between the inner ankle and the heel which leads to a condition of irritation and malnutrition of the skin in that situation which may even go on to ulceration. When these veins begin to appear a thin pad of lint or felt may with advantage be introduced under the stocking behind the inner malleolus; and when signs of irritation of the skin are observed a very useful application is an ointment of hazeline and lanoline gently rubbed over the part at night.

Groups of small, slightly raised, bright red spots on the skin somewhat resembling psoriasis are also met with, chiefly about the inner side of the knee and the outer side of the thigh. These spots appear usually after long standing and mostly in cold weather; they itch or burn and rapidly disappear with rest. The lanoline and hazeline ointment is a suitable application. Sometimes after much standing or prolonged walking bright red patches appear on the legs attended by a sense of heat but not of itching; the redness disappears on slight pressure and fades gradually after a day or two of rest. These conditions are much benefited by the hot bath.

There is seldom any subcutaneous œdema such as gives rise to pitting on pressure but there is usually some permanent enlargement of the affected limb. I do not think that this increase in the size of the limb is due, as was suggested by Sir James Paget,[22] to muscular growth, but I believe it depends upon an increase in the intermuscular and subcutaneous cellular tissue; for the outline of the muscles and their visible contraction are obscured and the muscular power of the limb is diminished and not increased. The morning and evening measurements of the limb will be found to differ considerably and this is certainly due chiefly to fulness of the vessels, though it may depend partly upon intermuscular œdema. Moreover, in two of the cases related by Sir James Paget[23] the enlargement of the limbs disappeared under the use of friction and the hot douche, which would hardly have been the case if it had been due to muscular growth.

The measurements which I had the opportunity of taking in a case nine years after blocking of the femoral and external iliac veins were:—

	Affected limb.			Sound limb.
Morning	circumference of thigh	=	20½ inches	20 inches
Evening	,,	=	21½ ,,	
Morning	,, calf	=	13½ ,,	13 ,,
Evening	,,	=	14 ,,	

Sir Prescott Hewett[24] speaking of the after-history of cases of phlebitis says: "When seen in after years the condition of the limb in these cases of blocked veins has varied very much. In a few the limb recovered its usual appearance, save, perhaps, a very slight increase in its size, in no way interfering with the freest action, for I have known one gentleman who, after an attack of this kind which confined him to his couch for months, returned to deer stalking with as much zest and activity as before. In other cases the limb remained more or less swollen and consequently with its action more or less interfered with, the circulation being carried on by anastomosing veins, largely increased in size and tortuous."

The bones of the affected limb may appear to be enlarged but examination by the Roentgen rays shows that this is due to increase in the subperiosteal connective tissue, not to osteal growth. After some years, as the obstructed venous return is compensated by the development of the collateral veins, the enlargement of the limb may disappear or greatly lessen, its shape becoming more natural and the outline of the muscles more apparent. This improvement will be aided by hot baths, followed by gentle rubbing in the direction of the venous current, by moderate use of the limb, and by elastic support to the veins.

The heart, of course, has much extra work thrown upon it by venous obstruction, and when exercise is first resumed in a case of blocked vein dyspnœa is easily provoked; care must therefore be taken to put no needless strain upon the heart—e.g., by rapid walking or ascending hills. It should be remembered that if the resistance in the vessels is such as the heart can overcome, hypertrophy of the heart takes place to meet the increased resistance; but that if the resistance is greater than the heart can overcome, dilatation of the heart results. But gentle exercise is good and sunlight and pure air are very beneficial; for the better the oxygenation of the blood the more easily it circulates and the less is the fatigue of muscular action. Moreover, the more thoroughly the blood is oxygenated the less prone is it to thrombosis. It has been proved[25] that the inhalation of oxygen gas, or even the increased intake of oxygen by rapid respiration, diminishes the coagulability of the blood.

The sufferer from blocked veins who wishes to reduce the inconvenience to a minimum must live on light diet, be careful to avoid constipation or fæcal accumulation, take moderate exercise early in the day and rest in the evening, avoid hurried, severe, or prolonged exertion, clothe warmly but lightly, keep out of hot and ill-ventilated rooms, breathe pure air, and seek the sun.

The necessary limit of the time allotted to these lectures has, of course, obliged me to omit much that might have been said upon this most interesting subject—the coagulation of the blood within the living vessels, but one thing which will probably have become apparent to you is the small amount of our certain knowledge concerning the blood

[22] Clinical Lectures and Essays, p. 307. Medical Times and Gazette, March, 1858, p. 261. Here Sir James Paget says that he has not dissected a case and "can only guess that there is a real overgrowth of muscles."

[23] Clinical Lectures and Essays, p. 305.

[24] Transactions of the Clinical Society of London, vol. vi., p. 37.

[25] Brit. Med. Jour., July 14th, 1894. Hasebrock: Zeitschrift für Biologie, 1882.

—that wonderful living fluid which carries life and nourishment to every tissue, giving to the body its power of action and of feeling, and to the brain its power of thought and memory; which is so delicately constituted that by the invasion of a minute organism or the raising of its temperature two or three degrees it may be so profoundly altered that the whole body at once becomes disturbed, action impeded, and thought confused; and which, if it should undergo clotting within the vessels is changed from a source of healthy action to a cause of mortal danger or even of sudden death.

I say how little we really know of the vital chemistry and physiology of the blood. Here is a wide and fertile field for our advancing physiological chemists. I have only tried to make some small contribution to our clinical knowledge and I desire to thank you, Mr. President and the Council of the College, for giving me this opportunity and my audience for the kind patience with which they have listened to these lectures.

A CASE OF SPLENOMEGALIC POLYCYTHÆMIA, WITH REPORT OF POST-MORTEM EXAMINATION.

BY ROBERT HUTCHISON, M.D. EDIN., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO THE LONDON HOSPITAL;
AND
C. H. MILLER, M.D. CANTAB.,
ACTING DIRECTOR, LONDON HOSPITAL PATHOLOGICAL INSTITUTE.

THE patient in this case, a farm labourer, 45 years of age, was admitted into the London Hospital on July 26th, 1905, under the care of Dr. F. J. Smith at the request of Mr. A. Leigh Chignell. We are indebted to Dr. Smith for permission to publish the case, as he was away on holiday during most of the time that the patient was under observation. The patient's earlier history is contained in the following account kindly furnished by Mr. Chignell.

The patient first came under my care about seven years ago when I was called to see him as he had been found on the road in a fit, having fallen down while coming home from work. When seen he was in a dazed condition and the symptoms as described to me were "that he twitched all over and his body was thrown into various movements and was believed to be unconscious." There was no return of any of the symptoms and he resumed work in four days. He enjoyed good health until three and a half years ago when he suffered from a large carbuncle on the left side of the chest. Under treatment this healed up satisfactorily. He first noticed a peculiar twitching of the muscles of the face and especially of the mouth at this time and his face became pigmented and covered with acne spots. After six weeks he returned to his work. On Jan. 30th of this year he came to me for ulcerative stomatitis of a severe form affecting the whole mucous membrane of the mouth. He had been feeling uncomfortable after food for some time and the bowels were constipated. Under treatment the stomatitis recovered but the dyspeptic symptoms continued and giddiness and a feeling of faintness complained of. He attempted to return to work but fell down on the way and the symptoms from this time increased and vomiting appeared. He also lost flesh. The vomiting was irregular, occurring sometimes frequently in the course of one day whilst at others it would be absent for several days in succession. In June hæmatemesis occurred several times but the amount of blood brought up was small. The pulse at this time was slow and the heart appeared displaced. The temperature was normal or subnormal throughout. He complained of no pain except in the head, but there was tenderness on pressure over the stomach and spleen. Some enlargement of the spleen was noticed in March but it may have been present earlier. Giddiness was the most distressing symptom and grew worse, facial twitching also appearing. During the last weeks that he was under my care he became very forgetful. He was always a steady man and hard worker.

The family history showed nothing of interest except that the patient's father was alleged to have died from ague at the age of 55 years. On admission the patient was found to be a well-developed man of medium build. His face was covered with acne; the lips and nose were of a deep purple colour; there was no clubbing of fingers or œdema. The teeth were mostly carious and the gums were swollen, spongy, and inclined to bleed. On abdominal examination a large tumour was felt in the left side projecting from beneath the ribs and extending to the middle line and downwards to the umbilicus. The tumour was firm, dull on percussion, not tender, and exhibited a distinct notch. The liver could not be felt but seemed slightly enlarged on percussion. There was no ascites. The apex beat was in the fourth space, one inch outside the mid-clavicular line and of a heaving character. The area of cardiac dulness extended to the third rib above and to the left edge of the sternum. The heart sounds were clear. The pulse was slow (from 50 to 60 beats a minute) and of good volume. The arterial walls were very much thickened and tortuous. There were no enlarged glands. The lungs were normal. The average amount of urine passed was about from 30 to 35 ounces a day. The specific gravity varied from 1022 to 1030; a faint trace of albumin was present during most of his stay in hospital but no sugar. The knee-jerks were normal; the pupils reacted sluggishly to light. On ophthalmoscopic examination the discs were rather red and the retinal veins were engorged. The temperature during the whole illness was normal or slightly subnormal but rose to 108° F. at death.

Examination of the blood and blood pressure.—On admission blood taken from the lobe of the ear contained 8,000,000 red cells per cubic millimetre and 110 per cent. hæmoglobin (Haldane). The white cells were not estimated. On August 9th the blood pressure (Riva Rocci) was 140 millimetres of mercury. On the 11th blood taken from the ear contained 11,000,000 red cells, 17,160 white cells, and 120 per cent. hæmoglobin. On the 28th three and a half ounces of blood were withdrawn from the arm and citrated. The blood pressure just before the venesection was 130 millimetres and just after 145 millimetres. The viscosity of the citrated blood was estimated by Dr. F. Parkes Weber, who found that by the method which he has previously described[1] the coefficient of viscosity of the blood was 11·8 times the coefficient of viscosity of water. The specific gravity of the citrated blood estimated by the method of weighing was 1·071. On the 30th a drop of blood from the ear contained 22,000 white corpuscles per cubic millimetre. A differential count which Dr. A. E. Boycott was kind enough to make gave the following result:—

Differential Count of White Cells.

	Per cent.		In c.mm.
Lymphocytes	5·6	=	1232
Intermediates	2·4	=	528
Large hyalines	4·0	=	880
Neutrophiles	82·8	=	18,216
Eosinophiles	2·8	=	616
Mast cells	2·4	=	528
	100·0		22,000

No abnormal leucocytes. Nothing abnormal in red cells. No nucleated red cells found.

On Sept. 1st a drop of blood from the ear contained 7,500,000 red cells and 130 per cent. of hæmoglobin. On the 16th a drop of blood from the ear contained 20,000 white cells, of which the following was Dr. Boycott's differential count:—

	Per cent.		In c.mm.	
Lymphocytes	4·4	=	880	
Intermediates	3·2	=	640	
Large hyalines	3·2	=	640	
Neutrophiles	83·2	=	16,640	The high percentage of eosinophiles and mast cells points against the condition being an "inflammatory" leucocytosis.
Eosinophiles	3·6	=	720	
Mast cells	2·4	=	480	
	100·0		20,000	

Nothing abnormal about red cells. No nucleated red cells found. No myelocytes found.

Progress of the case.—The patient complained for some time after his admission to hospital of pain in the back of the head and would often hold his head between his hands. There was never any vomiting; his bowels were constipated. Shortly after admission he began to be troubled with failure of eyesight which gradually increased until he became quite blind. The fundi were examined on several occasions but nothing was found beyond slight hyperæmia. The failure of vision was accompanied by a great mental change; he became dull and stupid and unable to understand what was said to him. He was restless at nights and slept badly. This progressed till finally a state of complete somnolence was reached when he lay like a log in bed and was wet and dirty but still able to swallow food when it was put into his mouth. The tumour in the abdomen underwent a marked change during this time and became somewhat tender and gradually receded until finally it could be just felt one

[1] Paper with Mr. J. H. Watson, Transactions of the Clinical Society of London, 1904, vol. xxxvii., p. 131.

finger's breadth below the costal margin. Towards the end the cyanosis of the face and extremities became even more marked and he was quite unable to swallow anything. Death took place with coma and hyperpyrexia on Sept. 21st, about eight weeks after his admission to hospital. The treatment employed consisted in the administration of iodide and citrate of potash. Large saline enemata were administered with a view to dilute the blood and on one occasion he was bled to 16 ounces. None of these measures, however, had any effect upon his condition.

Necropsy.—The post-mortem examination was performed by Dr. Miller with the following result. Rigor mortis was present. The external appearances were as follows: the body was greatly wasted; the face was florid; there was deep congestion of the back. There were no enlarged glands. On opening the abdomen the muscles and cellular tissue of the abdominal wall were found to be deep red. The veins of the mesentery and intestines were greatly injected. Dense adhesions were found enveloping the spleen and between the liver and diaphragm. The liver, spleen, stomach, duodenum, mesentery, pancreas, suprarenals, and kidneys were removed together and dissected after removal. The spleen (which weighed 38½ ounces) formed a tumour projecting considerably below the costal margin. It was densely adherent to the surrounding structures and was large, hard, and of irregular shape. On section it was found to consist partly of purple structureless spleen pulp and partly of many areas resembling infarcts. They were of various sizes and sharply demarcated from the spleen pulp. They were firm and fibrous at the periphery but somewhat softer in the centre. Most of them were yellow but a few were a dull red. There were two small round accessory spleens. The liver weighed three pounds four ounces; its anterior surface was densely adherent to the diaphragm; the capsule was smooth elsewhere. The liver substance was unduly firm and very greasy. It was bronze-red in colour. There were not much congestion and no appearance of nutmeg. As regards the kidneys, the right weighed six ounces and the left seven ounces. The perinephric fat was yellowish-red. The capsules were thin and stripped readily; there were no cysts. The surface was smooth. The colour was a uniform deep purple. The cortex and medulla were natural. The pelvis and vessels were natural. No gross morbid lesion was found. Both suprarenals were large, soft, and difficult to define. The condition was apparently a hyperplasia. No gross morbid lesion was present. They each weighed one and a half ounces. The ureters, bladder, prostate, and testes were natural. The pancreas was firm and dull red in colour; it was not apparently altered in size or shape. As regards the alimentary system, the œsophagus was natural. The stomach was natural in size and shape. There was great injection but no ulceration. The duodenum and the small and large intestines showed great injection but no ulceration. The appendix was healthy. The mesentery showed great injection of veins. There was no enlargement of glands. The abdominal aorta was somewhat stained; otherwise there was no change. The vena cava and iliac veins were natural but very full of black fluid blood. The tongue was natural. The tonsils and the glands of the neck were not enlarged. The thyroid weighed 13 ounces. Its lateral lobes were enlarged, unduly firm, and of a red yellow colour. No trace of the thymus was found. The larynx and trachea were healthy. The diaphragm was at a slightly higher level than normal—the fourth space on the left side and the fourth space on the right side. The heart was pushed up into the fourth space. The pleuræ were very dense. There were adhesions between the diaphragm and the base of the lung on each side; otherwise they were free. The lungs were small and aerated throughout. There were many subpleural ecchymoses. A few small, dry, hard patches of purple substance peripherally situated and wedge-shaped were found, resembling infarcts. No sign of tubercle was present. The pulmonary veins were enormously distended with black fluid blood. The bronchial glands were not enlarged. The pericardium was not thickened; there were no adhesions. There was a slight excess of clear fluid. Some sub-pericardial ecchymoses were seen about the base. The heart weighed 12½ ounces. The right side and the left auricle were full of black fluid blood. The left ventricle was almost empty and firmly contracted. The endothelium was stained. The myocardium was difficult to cut and extremley fibrous in patches, especially in the papillary muscles. The valves and orifices were not altered. The endothelium was natural. The coronaries were not changed. The aorta was slightly stained. The left femur was sawn in half lengthwise; the upper quarter was red and with cancellous bone; the middle half was deep red and pulpy; and the lower quarter was yellow and with cancellous bone. The marrow of the right fourth rib was deep red and fluid. The skull was opened and the dura mater was found to be intensely injected to the smallest veins. The dura mater was opened and considerable œdema of the pia arachnoid and injection of the meningeal vessels were found. There was no gross change in the vessels at the base. The brain weighed 3 pounds 4 ounces; it was natural in size and shape. The occipital poles were diffluent. Examination after hardening showed that the tips of both occipital lobes, the tip of the left temporo-sphenoidal lobe, and the extreme edges of the lateral lobes of the cerebellum were the seat of dry, almost powdery, yellow softening. The left lenticular nucleus and the right optic thalamus were red and disintegrated. The pituitary body was apparently natural. Microscopical examination of the kidneys, suprarenals, and thyroid showed enormous congestion of all the capillaries and a good deal of fibrous overgrowth in the adventitia of the small arteries. The cardiac muscle showed a high degree of fibrosis, the muscle bundles being imbedded in masses of dense fibrous tissue although the muscle fibres themselves appeared to be normal. The arterioles of the heart wall showed great thickening of the adventitia.

Specimens of the spleen, bone marrow, and liver were submitted to Dr. J. C. G. Ledingham of the Lister Institute who kindly reported upon them as follows:—

Report by Dr. LEDINGHAM.—"Paraffin sections of the spleen and marrow fixed in sublimate were stained with hæmatoxylin-eosin, van Gieson's picro-fuchsin, hæmatoxylin, Unna-Pappenheim's methyl-green-pyronin, and Giemsa's azur-eosin.

Spleen.—A section was made through an infarct-free area. There is no increase in the connective tissue of the spleen trabeculæ nor does the pulp reticulum show any tendency towards fibrosis. In parts, however, the supporting tissue, especially in the vicinity of the large blood-vessels, presents a broadened-out and somewhat hyaline appearance resulting from lymph transudation. The Malpighian nodes are represented by a few small scattered remnants formed of three or four concentric rows of lymphoid cells mingled with clumps of hyaline material. These small nodes are not sharply differentiated from the surrounding pulp and some of them contain, besides hyaline masses, numerous pigment particles and nuclear detritus either lying free or imbedded in the cytoplasm of epithelioid cells which have wandered in from the periphery of the node. The most marked feature of the spleen pulp is the extreme congestion of the venous sinuses, the thin walls of which have in many places given way. A large number of these channels, however, still retain their endothelium intact. The following cell types are met with in the spleen pulp. 1. Small lymphocytes and large non-granular monuclear cells. These are the most frequent types. 2. Large mononuclear cells with vesicular nuclei and strongly basophile protoplasm (basophile myelocytes) occur here and there in small clumps. 3. Polynuclear neutrophile cells occur in large numbers. Small foci formed entirely of these cells along with nuclear detritus are often observed, suggesting almost some infective process. No organisms of any kind were detected in them (careful search was made for tubercle bacilli). 4. Mononuclear and polynuclear eosinophile cells were present in small numbers. 5. A few megakaryocytes were noted. 6. Epithelioid cells were met with here and there, some of them apparently exercising phagocytic functions. 7. The pulp was carefully searched for the detection of erythroblastic foci and a very few minute clumps of proliferating nucleated red cells were observed. Their nuclei frequently presented karyorrhexis or even actually budding, a feature to be noted in the marrow foci (*vide infra*).

Numerous sections were made through portions of spleen containing the infarct-like areas noted in the protocol. The centre of the caseous mass consisted of amorphous material with a few leucocyte shadows. The periphery was formed of dense connective tissue containing congested blood-vessels and outside these again was another connective-tissue zone containing enormous numbers of extravasated red blood corpuscles. Numerous epithelioid cells containing in their interior blood pigment and red blood corpuscles in various stages of disintegration were also present. No tubercle bacilli were detected in the areas after careful search, but so far as their histology went in the absence of actual

tubercles or bacilli they might very well represent the result of some tuberculous process. In view of the small number and size of erythroblastic foci in the spleen pulp one cannot conclude that the spleen was exercising any important function as a red blood cell forming organ. Nor was there much evidence of active red cell destruction except as already noted in the vicinity of the caseous areas.

Marrow.—The fat cells of the marrow have not entirely disappeared. The most notable feature is the dilatation of the thin-walled blood-vessels with red blood corpuscles. These congested blood-vessels traverse the whole section but there are no hæmorrhages into the substance of the marrow proper. The endothelium of the sinuses remains quite intact. The following cell types were noted. 1. Large mononuclear cells with somewhat vesicular nuclei and basophile protoplasm were most frequent. In morphology these cells correspond to the basophile myelocytes or undifferentiated cells of Dominici. Neutrophile myelocytes and polynuclear cells were present in fairly large numbers, though the granulation was difficult to demonstrate. Transition forms can readily be traced between these basophile cells which may sometimes attain a large size and the giant cells presently to be described. 2. Eosinophile cells, both mononuclear and polynuclear, occur in large numbers and in Giemsa preparations make a remarkably beautiful picture. 3 The giant cells present are of two types. Sometimes as many as ten may be seen in one field of the oil immersion Leitz $\frac{1}{12}$th, oc. 4. Cells with large-lobed nuclei assuming the most bizarre shapes are most numerous. The protoplasm of these cells is slightly basophile. Many of them appear to be developed directly from the basophile undifferentiated cells already noted and in which mitotic figures are frequent. The second type of giant cell possesses a straggling irregular nucleus which is intensely pyknotic and a cytoplasm which is inclined to be acidophile. These cells frequently contain entire leucocytes in their interior. They are evidently degenerated megakaryocytes. 4. Lymphoid cells are not very numerous. 5. Mast cells occur in small numbers. 6. With the Unna-Pappenheim stain plasma cells are found to be as scarce in the marrow as in the spleen pulp. 7. Here and there one sees erythroblastic foci, generally of small size but sometimes fairly large clumps of developing nucleated red cells are met with. The nuclei stain intensely while the cytoplasm takes on a yellowish stain. Frequently the nucleus is broken up or presents a budding appearance. It is possible that this irregular division is the explanation of the great variations in size and shape of the red cells in blood films *intra vitam*. One could not conclude from a single section that red blood cell formation was actively proceeding, but when one reflects that large tracts of marrow were in a similar condition one must infer that the polycythæmia is to be explained by a general increase of the erythroblastic functions of the marrow. The large number of granular cells in the marrow certainly indicates an increase in the leucoblastic function of that tissue and would explain the polynuclear leucocytosis in the circulating blood that is so marked a feature of most of the recorded cases.

Liver.—The interacinar capillaries are greatly congested with red blood cells, though polynuclear cells are also frequent. The liver lobules and acini are quite intact and the cells apart from very slight fatty infiltration appear healthy. Clumps of bile pigment occur in some of the liver cells and here and there one sees the lumina of the smaller bile channels filled with inspissated bile thrombi. There are no focal necrotic areas and no micro-organisms."

Remarks.—There can be no doubt that clinically this case belongs to the group characterised by chronic cyanosis with polycythæmia and splenomegaly, of which examples have been recorded by Vaquez, Saundby and Russell, Rosengart, Osler, Parkes Weber, and others, and for which Parkes Weber[2] has suggested the name of "myelogenic polycythæmia." The increased number of red cells (from 7½ to 8 millions per cubic millimetre) and the splenic enlargement together pointed to such a diagnosis. In addition, there was found by Parkes Weber an increase in the viscosity of the blood such as he has described in a previous case of his own, whilst a polynuclear leucocytosis which was present in our case has also been met with in some previously recorded examples of the disease. The cerebral and mental symptoms, too, which were such a marked feature in our patient have also been remarked in such cases before.

We are fortunate in being able to add another to the few recorded necropsies on cases of this group, and as far as an explanation of some of the most striking clinical symptoms is concerned the result was satisfactory enough. The loss of vision, for instance, and along with it probably the attacks of giddiness and the final stupor, may be held to be explained by the extensive areas of thrombotic softening in the occipital lobes of the brain. It cannot be said, however, that much light is thrown upon the pathogeny of the disease by a study of its morbid anatomy. That the amount of blood-forming tissue in the bone marrow was increased there can be no doubt, which, with the absence of any signs of increased blood destruction in the liver, would point to the polycythæmia being the result of an increased formation of red cells. The enhanced viscosity of the blood which is the consequence of the polycythæmia and the abnormal strain which it throws upon the arterioles may perhaps explain the high degree of vascular fibrosis met with. The fibrotic degeneration of the heart was certainly a most striking feature of the morbid anatomy but was perhaps merely secondary to the thickening of the walls of the coronaries.

As regards the softening in the occipital lobes of the brain and the large pulpy areas in the spleen, there can be no doubt, we think, that they were due to thrombotic necrosis, the consequence of stagnation of blood which the high viscosity of the latter tended to induce. We found no evidence of any primary tuberculosis of the spleen such as has been alleged to occur in some of these cases and are inclined to think that in such descriptions areas of infarction may have been mistaken for tuberculous foci.

In conclusion, we would like to take the opportunity of expressing our indebtedness to those who so kindly helped us in the investigation of the case; to Dr. Parkes Weber especially for much advice and suggestion and for estimating the viscosity of the blood; to Dr. Boycott for his careful reports on the histological features of the blood; and to Dr. Ledingham for his minute investigation of the histology of some of the more important organs.

London Hospital.

[2] THE LANCET, May 13th, 1905, p. 1259.

SPIROCHÆTA PALLIDA (SPIRONEMA PALLIDUM) IN SYPHILIS.*

BY THEODORE SHENNAN, M.D. EDIN., F.R.C.S. EDIN.,
SENIOR PATHOLOGIST, ROYAL INFIRMARY, EDINBURGH; LECTURER ON PATHOLOGY AND BACTERIOLOGY, SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, EDINBURGH, ETC.

(*Concluded from p. 667.*)

IN Siegel's papers,[2 3 4] in addition to the methods of staining and the description of the characters of his cytorhyctes luis, some details of previous discoveries in syphilis are given[4]—e.g., Klebs, Döhle, Stassano, &c.

Fr. Schultze,[120] Freund,[120] and Merk[121] contribute papers on the cytorrhyctes.

Spirochætæ in yaws.—Castellani in Ceylon [113 114 115] and Wellmann in Central Africa [116] about the same time found spirochætæ in films from the cutaneous papules of yaws some of which in form correspond closely to those of syphilis. I have seen one of Castellani's preparations through the kindness of Dr. J. O. Wakelin Barratt. There is no question as to the great similarity to spirochæta pallida. Castellani will not draw any conclusions as to any possible relationship between yaws and syphilis, though in this connexion it is of interest that Mr. Jonathan Hutchinson [121] holds in the face of great opposition that they are closely related, probably identical diseases.

Staining methods.—As I have indicated, Giemsa's method, or various modifications of it, is generally considered the best, but Leishman's modification of Romanowsky's stain also gives good results (Castellani,[115] Dudgeon[122]), while in the hands of Leishman himself it gives *better* results than Giemsa's stain. It must be acknowledged that the new Giemsa's stain, in containing methyl alcohol as a solvent, approximates to Leishman's stain which existed before it. Of Giemsa's new solution 15 cubic centimetres are added to 10 cubic centimetres of distilled water. The films which have been previously fixed in alcohol are stained for an hour at room temperature. The films may be

* The "superior," or raised, figures occurring throughout refer to the bibliography at the end of the article.

left in the stain over-night. After washing and drying with filter paper they are examined in cedar oil or balsam. Details are given in his papers.[117] [118] Davidsohn[123] strongly recommends cresyl violet, Herxheimer[45] Nile blue, and later[47] an aqueous solution of gentian violet after preliminary fixation in alcohol. Hoffmann,[6] Oppenheim and Sachs,[85] and Ploeger[62] stain with anilin water or carbolic gentian violet, Poleger finding that preliminary fixation in alcohol is not necessary. Carbol-fuchsin is also used by several investigators. Marino's azur solution is used by others—e.g., Metchnikoff. Weitlauer[121] claims success with Löffler's methylene blue. Bertarelli and Volpino,[28] Levaditi,[29] Paschen,[111] and Buschke and Fischer[17] have succeeded in demonstrating spirochætæ in sections by silver impregnation methods and such as are used for the demonstration of the flagella of bacteria, while Reitmann,[115] with a modification of Sclavo's method, and Proca and Vasilescu[80] with a modification of Pitfield's method for staining flagella have also been successful. In my experience the last gives good results. In addition to the authors named above, Schaudinn,[7] Nicolas, Favre and André,[99] Burnet,[20] Bandi and Simonelli[92] discuss and criticise the various staining methods.

Spirochætæ in other conditions.—Spirochætæ, sometimes approximating in form to spirochæta pallida but mostly differing from it, have been found, amongst others, by Polland[127] in hospital gangrene, by Buday[129] in noma and gangrenous tonsillitis, by Bonhoff[125] and Süpfle[126] in vaccine pustules, by Borrel[86] in several cases of mouse carcinoma, by Hoffmann and Mulzer[11] in ulcerated carcinoma, by Sobernheim and Tomasczewski[73] in cancer of the lips and balanitis, and by Kiolomenoglou and von Cube[49] in various venereal and non-venereal conditions. O. Moritz[97] found somewhat coarse spirochætæ in the bone marrow and in the muscular coat of the small intestine in severe anæmias and also in carcinomatous lymphangitis. He could not prove any relationship. As a rule all these spirochætæ except those described in the last two papers are readily stained and by other characters easily distinguishable from spirochæta pallida.

Gathering together the details from this not quite complete survey of the literature on the subject, and from my own experience, I may now piece together an account of the characters of these spirochætæ as at present understood. The names "spirochæta pallida," or "spiromena pallidum," and spirochæta refringens are descriptive, the former staining faintly, the latter being markedly refractile in the living state. The *spirochæta pallida* is an extremely delicate organism, weakly refractile when living, vigorously motile, stained with considerable difficulty and difficult to demonstrate, requiring at least a magnification of 800, with good illumination. It is long, extremely thin and filamentous, of a distinct spiral or corkscrew shape, both when living and when fixed on the slide. It tapers at the ends to a sharp point. In length it varies from 4 to 20μ; in breadth it measures about 0·25μ. The spirals number from six to 26, averaging from eight to ten. Not only are these spirals numerous but very narrow—not over about 1μ—regular and deep. Schaudinn, Hoffmann, Herxheimer, and others describe terminal flagella, but all observers are not agreed upon this point. When these are double they may really represent the commencement of a longitudinal fission. The spirochætæ may lie in clumps and occasionally form a felted mass. Löwenthal thinks that they are made up of several shorter (from 3 to 4μ) individuals, or possibly these may be degenerative forms. With Herxheimer, Mulzer, and others, he describes a granule or localised swelling between the middle and one terminal third, which may represent blepharoblast rather than nucleus. Some describe a terminal globular body, the real nature of which has not yet been ascertained. It may simply be a loop at the end of the spirochæta. Herxheimer has described other bodies in, on, or near the spirochæta. At first it was thought to possess a vibratile membrane attached throughout its whole length, but this idea is given up by most authors, with the exception of Dalous, the appearance being put down as artefact. The absence of such membrane along with the possession of flagella are held to be characters distinguishing it from other spirochætæ which commonly occur on ulcerated surfaces. Its motility is of three kinds: corkscrew, to and fro, and bending or lashing. In a film dried on the surface of glass the spirals may become stretched out owing to its becoming attached first at its extremities. By silver impregnation methods it has been demonstrated in sections of the liver in congenital syphilis and in the primary and secondary stages of the acquired disease. It lies in the capillaries of the papillæ of the corium, chiefly lying up against the endothelium or in the lumen. Thence it makes its way into the surrounding tissues and works up between the cells of the Malpighian layer to reach but not to penetrate the stratum corneum. With Giemsa's stain, it takes a rose-pink colour, or slightly lilac if the staining be too prolonged. It may also be demonstrated by "flagella" stains and impregnation methods, by gentian violet, carbol fuchsin, cresyl violet, Nile blue, &c. Schaudinn places spirochæta pallida with the protozoa rather than with spirillar bacteria, allying it to the trypanosome group.

The *spirochæta refringens* is generally acknowledged to be of saprophytic nature and corresponds to the forms already described in normal smegma, in balanoposthitis, vulvo-vaginitis, on the surface of ulcers about the genitals, on venereal warts, in the mouth secretions, on the teeth, tonsils, in ulcerated carcinomas, and probably also the forms found in gangrene are closely related. It is thicker than spirochæta pallida, distinctly refractile. It may have a marked corkscrew shape and motion when alive but flattens out when dried in films, so as to have usually a wavy outline. The curves are flatter and longer than those of spirochæta pallida, measuring from 1·5 to 2μ or more. It varies in length like the spirochæta pallida, measuring most commonly from 8 to 10μ. It is usually described as having truncated ends but often it has tapering ends or one end is sharp and the other blunt. It possesses a vibratile membrane but no flagella. It stains easily, quickly, and deeply by all methods and with Giemsa's stain which is the only differential one as yet known it takes a purplish or violet colour. It occurs usually only on the surface of moist and ulcerated syphilitic lesions. Some describe it as invading the glands.

Demonstration of these parasites.—From the literature I have picked out the details as to 758 lesions examined by different workers and find that spirochæta pallida has been found most often in moist papules, mucous plaques, and condylomata, genital and extra-genital—159 positive and 26 negative. Next come hard chancres, excised or scraped—150 positive and 55 negative; non-ulcerated papules—92 positive and 31 negative. Success has not been as frequent in films made from excised or punctured buboes—52 positive and 30 negative—and rarely has spirochæta pallida been found in roseolar blood—four positive and 17 negative—or in the circulating blood—five positive and 37 negative.

In lesions with moist or ulcerating surfaces the spirochæta pallida is commonly accompanied by the spirochæta refringens and it is a very significant fact that most successes have been attained in such circumstances. From one's own experience the number of forms intermediate between the two, partaking to some extent now of the one, now of the other, is remarkable. It is sometimes extremely difficult, often impossible, to refer these forms to the one group or the other and it is easy to imagine how readily one's percentage of successful demonstrations of the spirochæta pallida in such lesions might be raised by having regard solely to tinctorial or morphological characters. Frequently, in perfectly stained Giemsa preparations I have seen forms, staining pink like spirochæta pallida, sometimes delicate but wavy or almost straight in outline like the spirochæta refringens and, moreover, not in isolated examples which might be explained as stretched spirochætæ pallidæ, but in very considerable numbers. Other forms stain deeply like spirochæta refringens but they have a spiral outline like typical spirochætæ pallidæ. As a rule, these forms are thicker than spirochæta pallida and do not present so much difficulty as the other class of intermediate forms. Still, the fact remains that some authors figure such forms as spirochætæ pallidæ. As group characters one must take both tinctorial and morphological characters into consideration. The refinements of technique necessary to demonstrate flagella are too great to make their presence a point of great importance for the ordinary observer. When their presence is more widely confirmed, the methods of demonstration simplified, and staining results more constant, they might be of use in the diagnosis of the intermediate forms just referred to. It is regrettable that in condylomata and mucous plaques, the most infective lesions in the adult, these difficulties of diagnosis should be experienced.

Before making films from such lesions it is well thoroughly to cleanse the surface, as the better this is done the fewer saprophytic spirochætæ are met with. This refers also to hard sores, ulcerated papules, and rupioid or crusty

syphilides. After cleansing the surface it should be scraped fairly deeply with a sharp spoon, the bleeding allowed in great measure to stop, and films (from six to eight) made from the material scraped away and from the bloody fluid which exudes. Some authors dilute these products previously to making the films with a drop or two of distilled water.

Hard chancres and *papules*, whether ulcerated or closed, may be excised, cut open from their under surface, and the expressed juice smeared over slides or treated by scraping, as in making films from moist or ulcerated lesions.

Blood.—Though several observers have found scanty spirochætæ in the blood during life, either by puncture of the skin or of the spleen, it is necessary in general to take a larger quantity of blood than is available by these means and to treat it in the manner indicated first by Noeggerath and Staehelin. They adopted the method employed for the detection of trypanosomes in circulating blood. They take at least one cubic centimetre of blood from an arm vein, mix it with ten cubic centimetres of one-third per cent. acetic acid, centrifugalise and examine the deposit. One may remark that it is also possible, judging by analogy from the fact that many trypanosomes being of less specific gravity than the corpuscles remain in the supernatant fluid, that similarly all the spirochætæ present may not be sent down by centrifugalising. Roseolar eruptions may be scraped or punctured and the blood examined, or following Levaditi and Petresco[29] small blisters may be raised over them by means of cantharides and the fluid examined after centrifugalising. Several authors—e.g., Bodin[110]—report the failure of Levaditi's method in their hands. If, as some think,[109] this lesion is caused by impaction of plugs of spirochætæ in the capillaries of the papillæ they ought to be more easily demonstrable than they are at present.

Indurated buboes may be excised or punctured with a fairly stout hypodermic needle. After the usual antiseptic precautions the gland is punctured and the point of the needle kept near its surface so as if possible to receive some lymph from the peripheral sinus. The gland meanwhile should be massaged between the finger and thumb of the other hand. In view of the fact that some observers mix scrapings with a drop or two of distilled water to facilitate securing a thin film it is probably not of importance to insure the syringe being absolutely dry before using.

Congenital syphilis.—It is now a well-established fact that spirochæta pallida occurs very constantly in the blood and tissues of infants suffering from congenital syphilis. It has been found in the blood during life and in the organs after death, especially in the liver, spleen, adrenals, kidneys, bone marrow, lungs, and even once in the cerebro-spinal fluid. In the bullæ of pemphigus occurring in such infants Levaditi, Salmon, Hoffmann, and others have found spirochætæ abundantly, often in clumps apparently the result of agglutinative action. This is very important in consideration of the great infectivity and virulence of congenital syphilitic lesions and is a fact greatly favouring an etiological relationship between spirochæta pallida and syphilis, as is also the fact that in tertiary syphilis, which is little or non-infective, most authors fail to find spirochæta pallida at all.

Fixation.—Most authors agree that the films, after drying in the air, should be fixed in absolute alcohol or alcohol-ether mixture for from ten minutes to 20 minutes or methyl alcohol for about five minutes. Schaudinn recommends that the films as soon as made should be exposed for two or three seconds to the vapour of osmic acid before drying and fixation in alcohol. For staining Giemsa's medium is most used. It is related to Leishman's modified Romanowsky's stain, which gives as good results when one is expert in its use. Modifications of Pitfield's flagella stain—e.g.[90]—give good results, but the spirochætæ appear thicker and coarser as well as darker than by other methods. This is still more evident in films and sections treated by silver impregnation methods.[29 90 17] Schaudinn demonstrates the terminal flagella by Löffler's special method. Films are mounted in cedar oil or balsam.

The following points may be taken as axioms to be borne in mind. (*a*) Saprophytic spirochætæ are always present on ulcerated lesions, on moist papules and mucous plaques. These are often difficult to distinguish from spirochæta pallida. (*b*) The more thorough the preliminary cleansing the fewer of these seen. (*c*) Spirochæta pallida may be somewhat deeply in the lesions and apparently in clumps. (*d*) On account of this one must make six to eight films. (*e*) A little blood is usually an advantage in the film as it assists in focussing and, moreover, spirochætæ are often seen in apparent relationship to red blood corpuscles. (*f*) In the case of excised chancres and papules it is well to bear in mind that spirochæta pallida is not demonstrable after from six to ten hours, even though the tissue has been kept on ice. They soon degenerate. (*g*) The films should be thin and should be fixed as soon as possible. (*h*) When using Giemsa's method the nuclei of the leucocytes should be stained of a deep brownish purple, almost black, colour, otherwise the spirochætæ will not be seen. (*i*) Decolourisers such as alcohol or weak acetic acid should, if possible, not be used as they tend rapidly to discharge the stain from spirochæta pallida. This does not apply when the mordanting (flagella) methods are employed.

Cultivation.—Several attempts have been made to cultivate these spirochætæ but so far without success; judging, however, from the successful cultivation of trypanosomes this should not be impossible. De Souza and Pereira[80] used human blood with 5 per cent. each of citrate of sodium and chloride of sodium. Bertarelli and Volpino[83] added gland juice to human blood with 50 per cent. of citrate of sodium, incubating at 27°, 30°, and 37° C.

Control observations.—A very large number of these have been made by numerous workers. Most agree that spirochæta pallida is not found in gonorrhœal pus and buboes, epididymitis, soft chancres and associated buboes, phagedænic ulcer, venereal warts, non-syphilitic ulcers of the glans, inflamed phimosis (except in one case in which a masked hard chancre was suspected), balanitis, and balanoposthitis; nor in smegma in man or woman, scabies, iodide rash, verruca juvenilis, scrofuloderma and lupus, phthisical sputum, furunculosis, acne, sycosis, dental suppuration, acute dermatitis, dermatitis herpetiformis, herpes zoster, eczema acute and chronic, eczema seborrhœicum, eczema papulo-crustosum, erythema exudativum multiforme, erythema nodosum, lichen ruber planus, psoriasis, pemphigus neonatorum, molluscum contagiosum, impetigo simplex and contagiosum, sarcoma and carcinoma of the penis and labia, epithelioma cutis, carcinoma of the lip, the rectum, the neck, and the upper jaw, fibroma of the mamma, hypertrophy of the tonsils, Vincent's angina, throat mucus and mouth secretions, normal skin, organs of newly born non-syphilitic children, and many other pathological and non-pathological tissues.

My own investigations embrace a comparatively small number of cases, the greater number of which have been obtained for me by Dr. Alexander M. McIntosh, clinical assistant in the lock wards of the infirmary, who has also assisted me in the microscopical investigation of several of them. I am also indebted to him for furnishing me with histories of most of the cases.

CASE 1.—A male, aged 18 years. He had had six weeks' illness. There were ulceration under the prepuce and gonorrhœa. On admission in October, 1905, there was a roseolar and papular rash over the whole of the body. There were œdema of the prepuce and a concealed hard chancre near the corona. The indurated groin glands were tender to the touch. Treatment consisted of mercurial inunctions; the prepuce was slit up, &c. The patient was readmitted at the end of November with gonorrhœal arthritis. Spirochæta pallida was found in the scrapings from a non-ulcerated papule on the thorax. The fluid from the groin gland proved negative. (Stain: Giemsa.)

CASE 2.—A male, aged 25 years. He had had frequent connexions, the last about three weeks before admission. There were sores on the penis and a rash appeared a few days later on the trunk and extremities (papular syphilide). There were mucous plaques over the pharynx. There were indurated buboes. On examination fluid from the glands gave a negative result. In scrapings from the hard chancre spirochæta pallida was present along with spirochæta refringens. Scraping from the dry papulo-squamous syphilide proved negative. (Stain: Giemsa.)

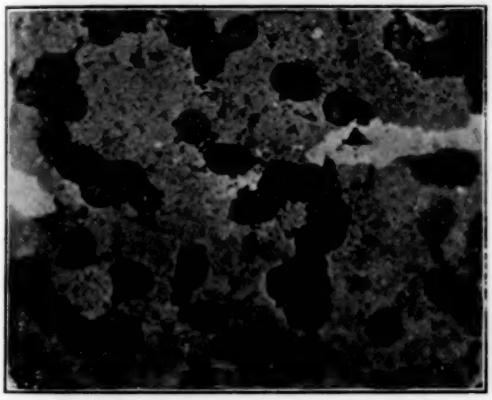
CASE 3.—A male, aged 22 years. Infection occurred about 12 months before admission. There were typical peri-anal condylomata. Scrapings from these showed numerous spirochætæ refringentes and many intermediate forms, many delicate, staining pink with Giemsa, but straight or wavy in contour. Some forms were thin, with narrow spirals, but staining of a bluish or purplish colour.

CASE 4.—A male, aged 19 years. There was a two months' history. There was a diffuse macular and papular rash over the face and the body. The prepuce was œdematous and there was a concealed hard chancre. The glands were

FIG. 1.

Spirochæta pallida in apparent relation to a red blood corpuscle. Stained by Giemsa's solution. The organism appears in the centre of the field, sloping downwards from left to right.

FIG. 2.

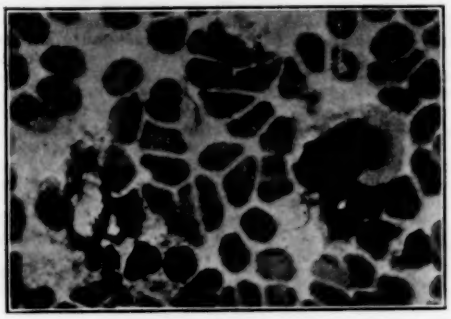


Spirochæta pallida in relation to red blood corpuscles. Reproduction from an untouched negative. Film stained with Rossi's stain. One-twelfth 4 oc. Zeiss. Bellows 35 centimetres. The organism appears at the extreme top edge of the illustration, just under the figure 2.

FIG. 3.

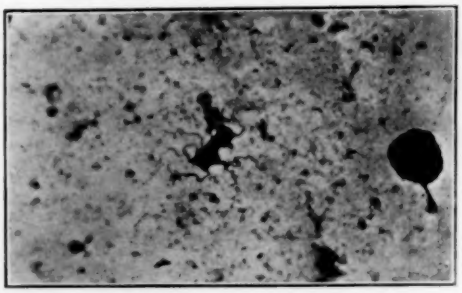
Film from condyloma latum showing numerous forms, mostly intermediate between spirochæta pallida and spirochæta refringens. Numerous bacteria stained by Giemsa's solution.

FIG. 4.



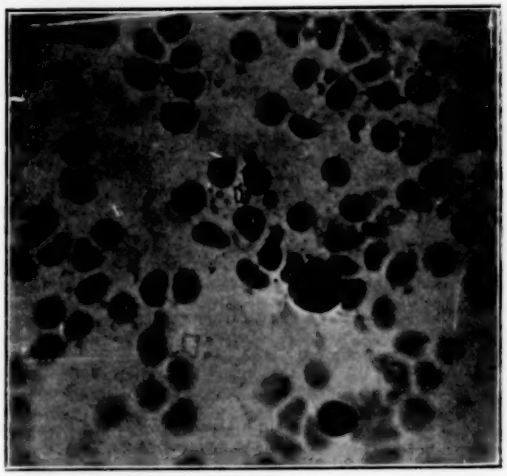
Spirochæta refringens. Two examples scraped from a syphilitic hard sore. Stained by Giemsa's solution.

FIG. 5.



Peculiar flagellated body found in film made from fluid expressed from the cut surface of a hard chancre. Stained by Giemsa's solution. × circ. 1200.

FIG. 6.



Peculiar loops and roundish bodies found not uncommonly in smears from lymph glands. Loops stained by Giemsa's solution (red). Roundish bodies stained by Giemsa's solution (blue).

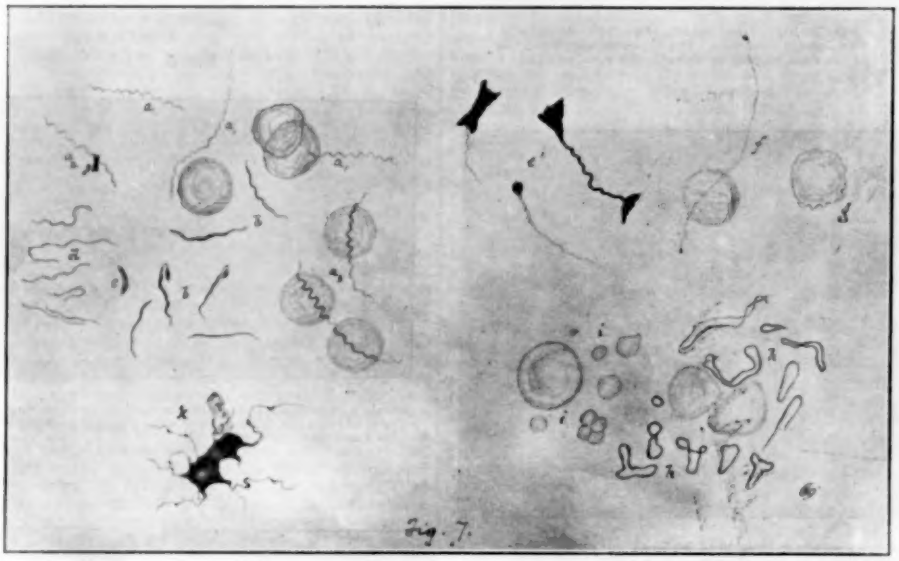
not typical. Treatment consisted in circumcision and mercurial inunctions. Films made from the excised chancre contained a few spirochætæ pallidæ and a peculiar flagellated body. The films were examined by both Dr. McIntosh and myself. The body stained a brownish colour with Giemsa's stain and in it a clear spot resembling a vacuole was readily distinguished. It had at least six angles and to these whip-like appendages resembling spirochæta pallida in tinctorial and morphological characters were attached. In the case of two of these the thickness was greatest near the body and gradually lessened as one passed out. The appearance was evidently not an artefact and the staining of the central mass was not like that of red blood corpuscles in the film. As to its nature one can make no suggestion and I have not seen another body like it. It does not altogether look like a red blood corpuscle to which spirochætæ are attached and the hæmoglobin of which is diffusing along their proximal portions. If it is of importance in connexion with spirochæta pallida it is curious that no other observer has seen an exactly similar from the macular eruption proved negative. Films from the excised hard chancre contained numerous spirochætæ pallidæ. (Stain: Giemsa.)

CASE 7.—A male, aged 38 years. A hard chancre appeared five weeks before admission. There was a typical hard chancre on the dorsum of the penis. There were typical groin glands and papular syphilide. This was one of the first cases I examined. I made only three films from the chancre and could not find spirochætæ. (Stain: Geimsa.)

CASE 8.—A male, aged 23 years. 13 days after the last connexion an ulcer appeared on the right side of the glans and rapidly enlarged, eating into the glans deeply. There was no glandular enlargement or induration. There was no rash. The ulcer healed rapidly under treatment with lotio nigra. Films from the ulcer contained numerous spirochætæ refringentes. There were no spirochætæ corresponding to spirochæta pallida. (Stain: Giemsa.)

CASE 9.—A female, aged 32 years. There was a doubtful ulcer at the fourchette. Films made from this contained numerous bacteria and spiral forms most corresponding

FIG. 7.



a–i × about 1000, *k* × about 1200. *a*, Spirochæta pallida—a_1, in relation to red blood corpuscles; a_2 crossing an oblong body (particle of chromatin?) and apparently attached to one of the angles; a_3, crossing red blood corpuscles showing apparent thickening. *b*, Spirochæta refringens. *c*, Fusiform body like bacillus fusiformis, frequently seen in the ulcerated lesions. *d*, Intermediate forms from condyloma latum. *e*, Artefacts, drawn-out nuclei, &c. *f*, A thin filament of fibrin (?) simulating spirochæta pallida. *g*, Wrinkled margin of deformed red blood corpuscle which might be mistaken for spirochæta pallida encircling it. *h*, Peculiar loop-shaped bodies staining bright pink with Giemsa's solution found in several of the films from the glands. Their relationship to the spirochætæ though possible is not clear. *i*, Rounded bodies (Winckler's ?) in gland fluid. They stain a pale blue with Giemsa's stain. *k*, Peculiar body found once in hard chancre. Note the fusiform thickening seen in the course of the flagella-like extensions.

object. This very fact tends to make one very sceptical as to its importance. Still, it is necessary to put the fact on record and a micro-photograph of it is reproduced. (Figs. 5 and 7.) In the same cases numerous spirochætæ pallidæ were found in the scrapings from a closed papular syphilide. (Stains: Giemsa and modified Pitfield's flagella.)

CASE 5.—A male, aged 22 years. Infection occurred seven weeks before admission. There were a concealed hard chancre and a diffuse and roseolar rash. There were typical indurated groin glands. Treatment consisted in circumcision and mercurial injections. On examination scrapings from the macular eruption proved negative. Films from the excised hard chancre contained numerous spirochætæ pallidæ. (Stains: Giemsa, modified Pitfield's flagella, and carbolic gentian violet.)

CASE 6.—A male, aged 19 years. Infection occurred from five to eight weeks before admission. There were a hard chancre on the prepuce and a macular eruption; the indurated groin glands were typical. Circumcision was performed and mercurial injections were given. Scrapings morphologically to spirochæta refringens, but a few delicate with narrow spirals like spirochæta pallida. On account of this result I asked Dr. McIntosh to watch this patient carefully. About a week later a typical macular rash appeared on the thighs and thorax, the primary sore becoming quite typical. (Stain: Giemsa.)

CASE 10.—A male, aged about 24 years. He had had syphilis seven or eight years ago. Films made from scrapings of the sores contained numerous intermediate forms, some of which were apparently spirochætæ pallidæ and numerous forms corresponding to spirochæta refringens.

CASE 11.—A female, aged 39 years. There were condyloma, papular rash, and indolent buboes in the groin and behind the sterno-mastoid. Films were brought to me which had been made from the condyloma. No spirochætæ pallidæ were found in six films.

CASE 12.—A male, aged 22 years. The last connexion was 11 days before admission. He was discharged on the ninth day. He had œdema of the prepuce, phimosis, and concealed soft chancre. There were no enlargement of the

glands and no rash. Circumcision was performed, removing the sore. Films showed no spirochætæ like spirochæta pallida.

CASE 13.—A male, aged 24 years. The patient was infected with gonorrhœa and soft sores about eight months before admission. Now he had induration at the preputial orifice. There was a diffuse macular rash on the body with a few papules on the penis and pubes. Typical indolent buboes were present in the groin and behind the sterno-mastoid. The hard chancre was excised. Films were made from scrapings from the surface and fluid from the cut surface. In eight films no spirochætæ pallidæ were discovered.

CASE 14.—A male, aged 35 years. There was a three and a half months' history. There was a papulo-squamous syphilide on the legs and trunk which was drying up under treatment. He was twice examined with a negative result.

CASE 15.—A male, aged 20 years. There was a three months' history. He had perianal condylomata which were now drying up under local and general treatment. A few spirochætæ refringentes were found but no spirochætæ pallidæ.

CASE 16.—A male, aged 24 years. Infection occurred ten months before admission. A sore formed which never completely healed. Connexion meanwhile was almost fortnightly. Three weeks before admission the sore broke down extensively and became indurated and indolent. The glands were enlarged and hard. There was a papular rash. From fluid from the glands films were made. No spirochætæ pallidæ were found but a few peculiar tailed bodies like spermatozoa. These were possibly drawn-out nuclei of leucocytes. (Fig. 7, *e*.)

CASE 17.—A male, aged 19 years. Infection occurred four weeks previously to admission. On admission the patient had a concealed hard chancre. Circumcision was performed. Four weeks later (December, 1905) there were a dry parchment sore on the glans which was healing, and indurated groin glands. Scrapings from the sore on the glans showed presence of spirochæta refringens and some intermediate forms, some of which approximated in form but not in colour to spirochæta pallida. Some of them had a small dark body attached at one end. Fluid from the groin glands contained no demonstrable spirochætæ but numerous flattened or oval loop-like structures, staining bright pink with Giemsa's solution, were seen (Figs. 6 and 7). Some of these were shaped like the "eye" of the "hook and eye" of the dressmaker. In the same case there were rounded bodies varying in size from 1μ to 4μ, staining a delicate blue with Giemsa, sometimes single, sometimes in clusters, as if they had been contained within a phagocytic cell which had broken up in the process of making the film. These were probably products of the degeneration of cells. They are possibly analogous to the bodies described by Winckler. Some of these can be made out in Fig. 6.

CASE 18.—A male, aged 20 years. There was a two months' history. He had a general rupial eruption over the whole of the body resembling impetigo at parts. Scrapings from the bases of these lesions and fluid expressed from them failed to show the presence of spirochæta pallida.

CASE 19.—A male, aged 22 years. There was a 13 months' history. Treatment had been irregular. There were peri-anal condylomata. Films were made from the condylomata but no spirochætæ pallidæ could be detected.

CASE 20.—The hard chancre of another male was examined and numerous spirochætæ pallidæ were discovered. No history of the case is now obtainable.

CASE 21.—A male, aged 28 years, suffering from tabes dorsalis. Symptoms began three months after infection with syphilis three years ago. Spinal fluid was removed by lumbar puncture. No spirochætæ were found. On cultivation, in one tube a pure culture of streptococci developed.

Of these 21 cases, two (8 and 12) were not syphilitic; another (21) was a case of tabes dorsalis three years after infection. Excluding these there are left 18 cases showing 25 lesions examined. Out of the 18 cases six showed the presence of undoubted spirochæta pallida. In three others spirochætæ were found which could not with certainty be placed either with spirochæta pallida or spirochæta refringens. One case (7) was examined when I had little experience in looking for spirochæta pallida. In one case (9) the possibilities are in favour of the bodies seen being spirochætæ pallidæ. In two cases (14 and 15) the lesions were drying up under treatment. The results were quite negative in the remaining five cases.

As regards the lesions, five hard chancres showed positive results; in two the results were doubtful and in three they were negative. Two non-ulcerated papules gave positive results; two dry papulo-squamous syphilides gave negative results, and two roseolar rashes also were negative. Four condylomata were examined; three were negative and one was doubtful. Four glands were examined and in none could undoubted spirochætæ pallidæ be found. One rupioid syphilide was examined with a negative result. Typical spirochætæ pallidæ were found only in hard chancres and in closed papules—i.e., in typical syphilitic lesions.

CONCLUSIONS.

It is astonishing with what unanimity this discovery has been accepted on the continent, an occurrence quite unprecedented in discoveries of similar importance, but there is much to support the relationship of spirochæta pallida to syphilis. The most important facts in favour are its occurrence in non-ulcerated lesions, such as papules and buboes far away from the primary sore; its occurrence in the circulating blood and splenic blood in acquired syphilis, its occurrence specially in virulent infective lesions, and its absence from non-infective tertiary lesions; its presence in the depths of superficial lesions where it is stated to be unaccompanied by other organisms, and its definite localisation in the corium—if absolutely confirmed; its presence in congenitally syphilitic infants in great numbers and its occurrence—according to most observers—only in primary and secondary syphilitic lesions and in congenital syphilis—never in non-syphilitic diseases. Against it is its frequently scanty numbers, films in very many of the reported successful cases revealing the presence of only one or two spirochætæ, after repeated and prolonged search, the numbers thus frequently bearing no relationship to the severity of the tissue reactive changes, which is, as Siebert points out, without analogy in the domain of pathology; the possibility, which is by no means disproved, that various organisms may invade glands penetrating from a superficial ulcer; the difficulty of diagnosis in the case of the numerous intermediate forms which are found so commonly in such highly infective lesions as the mucous plaque, &c.; the claim, still strongly upheld by some, that forms indistinguishable from spirochæta pallida are found in non-specific lesions. The last point, of course, even though it were granted, does not necessarily invalidate a causative relationship to syphilis.

In conclusion, one may say that while there is a very considerable probability that spirochæta pallida bears an etiological relationship to syphilis we require to know more about spirochætæ in general and to have better methods of distinguishing the many forms intermediate between the typical spirochæta pallida and the typical spirochæta refringens before we can unreservedly accept this as a completely proved fact in pathology. One can say very little as yet with regard to the peculiar loop-like and rounded bodies found in syphilitic glands and to such bodies as the flagellated structure I have described in a film from a hard chancre.

Bibliography.—[B. K. W. = Berliner Klinische Wochenschrift; D. M. W. = Deutsche Medicinische Wochenschrift; W. K. W. = Wiener Klinische Wochenschrift; M. M. W. = Münchener Medicinische Wochenschrift; B. M. J. = British Medical Journal; and Cpt. Rend. = Comptes Rendus Hebdomadaires de la Société de Biologie.] [1] Horand: Ref. [37] and Lyon Médical, 1905, 33, 1223. [2] [3] [4] Siegel: M. M. W., 1905, 1321, 1384. [5] Schaudinn and Hoffmann: Arbeiten aus dem Kaiserlichen Gesundheitsamte, 1905, xxii., 2, 527. [6] Ibid., B. K. W., 1905, 22. [7] Ibid., D. M. W., 1905, 18. [8] Ibid., D. M. W., 1905, 20. [9] Schaudinn: D. M. W., Oct. 19th, 1905. [10] Hoffmann: B. K. W., 1905, 23. [11] Ibid., B. K. W., 1905, 28. [12] Ibid., B. K. W., 1905, 42, 1022. [13] Ibid., B. K. W., 1905, 46, March. [14] Ibid., D. M. W., 1905, 51, 2070. [15] [16] Buschke and Fischer: D. M. W., 1905, 20, 791; 21, 839. [17] Ibid., B. K. W., 1906, 1, 6. [18] Metchnikoff and Roux: Annales de l'Institut Pasteur, November, 1904, 761. [19] Ibid., Bulletin de l'Académie de Médecine, 1905, p. 468. [20] Ibid. (ref.), M. M. W., 1905, 24. [21] Ibid (4th Mem.), Annales de l'Institut Pasteur, November, 1905. [22] Metchnikoff: Archives Générales de Médecine, 1905, 26, 1625. [23] Raubitschek: W. K. W., 1905, 28, 752. [24] Frosch: ref. [9] and [22]. [25] Reckzeh: ref. [34]. [26] Wechselmann and Löwenthal: Med. Klin., 1905, 28. [27] Levaditi: La Semaine Médicale, May 24th, 1905. [28] [29] Ibid., Cpt. Rend., 1905, 243, 845. [30] Levaditi and Petresco: Presse Méd., Par., 1905, 78, 617. [31] Salmon: La Semaine Médicale, 1905, 247. [32] Ibid., Cpt. Rend., 1905, 19, 883. [33] Jacquet and Sevin: ref. [29]. [34] Kraus: W. K. W., 1905, 22, 592. [35] Volk: ref. [29]. [36] Schuller: Centralblatt für Bakteriologie, Ref., xxxvi., 24, 25, 1905 (gives references to his papers). [37] Vuillemin: Comptes Rendus de l'Académie des Sciences, 1905, cxl., 23, 1567. [38] McWeeney: B. M. J., 1905, i., 1262. [39] Lesourd: Annales de Dermatologie et de Syphilographie, June, 1905. [40] C. Fraenkel: M. M. W., 1905, 24, 1128. [41] V. Jensen: Hospitalstidende, Nr. 25, 1905. [42] Bordet and Bayet: Presse Méd. Belge, 1906, 26, 614. [43] Bordet and Gengout: Soc. Roy. de Sc. Brux., 63, 124, 1906. [44] Lassar: Dermat. Zeitsch., 1905, 6, 418. [45] K. Herxheimer and Hübner: D. M. W., 1905, 26, June 29th. [46] Herxheimer and Löser: M. M. W., 1905, 46, 2212. [47] Herxheimer: M. M. W., 1905, 39. [48] Hübner: Dermat. Zeitsch., xii., ii., Nov., 1905.

[49] Kiolomenoglou and v. Cube: M. M. W., 1905, 27. [50 51] Babes and Panea: B. K. W., 1905, 28 and 48. [52] Galli-Valerio and Lassueur: Rev. Med. d. l'Suisse Rom., 1905, July 20th. [54] Krzysztalowicz and Siedlecki: Monatschrift für Praktische Dermatologie, 1905, 41, 6, 231. [54] Thesing: D. M. W., 1905, 32, August 10th; [55] M. M. W., 1905, 28, 1337. [56] Borrel: Cpt. Rend., 1905, 16. [57] Moritz: Petersburger Medicinische Wochenschrift, 1905, 20; and Deutsches Archiv für Klinische Medicin, Band 84, 1905. [58] Rille: M. M. W., 1905, 29, 1377. [59] Rille and Vockerodt: M. M. W., 1905, 34. [60] Proca and Vasilescu: Cpt. Rend., 1905, 23. [61] Noeggerath and Staehelin: M. M. W., 1905, 31, 1481. [62] Ploeger: M. M. W., 1905, 29, 1381. [63] Jesionek: M. M. W., 1905, 49, 2394. [65] R. Kraus and Prantschoff: W. K. W., 1905, 37, 941. [64] Bandler: Prager Medicinische Wochenschrift, 1905, 34, 475. [67] Leiner: ref. [68]. [68] Lannois: ref. [66] and M. M. W., 1905, 31, 1518. [69] Almkvist and Jundall: Allgemeine Schwed. Aerztez., 1905, No. 25, and ref. [66]. [70] Mulzer: B. K. W., 1905, Sept. 4th (quotes Caillag, Rona, and Menge-Krönig.) [71 72] Nigris: D. M. W., 1905, 36, 51. [73] Scholtz: D. M. W., 1905, 37, Sept. [74] Grouven and Fabry: D. M. W., 1905, 31, 1469. [75] Sobernheim and Tomaszewski: M. M. W., 1905, 30, 1857. [76] Siebert: D. M. W., 1905, 41. [77] Flügel: D. M. W., 1905, 44. [78] Brönnum and Ellermann: M. M. W., 1905, 2093, 2241. [79] Roscher: B. K. W., 1905, 44, 45, 46. [80] De Souza, jun., and Pereira: B. K. W., 1905, 44. [81] Queyrat: M. M. W., 1905, 29, 1420. [82] Queyrat and Joltrain: see [81] and M. M. W., 1905, 31, 1518. [83] Reischauer: D. M. W., 1905, 34, August 24th. [84] Neumann: M. M. W., 1905, 38, 1848. [85] Oppenheim and Sachs: D. M. W., 1905, 29 and 31. [86] Ibid., M. M. W., 1905, 1507, 1517. [87] Ibid., W. K. W., 1905, 45, Nov. 9th. [88] Bertarelli and Volpino; Centralblatt für Bakteriologie, O., 1905, Nov. 24th. [89] Nicolas, Favre, and André: Lyon Médical, cv., 1905, 497. [90] Burnet: Annales de Dermatologie et de Syphilographie, 1905, xi., 833. [91] Spitzer: W. K. W., August 3rd, 1905. [92 93] Bandi and Simonelli: Gazzetta degli Ospedali e delle Cliniche Mil., 1905, 85 and 105. [93] Ibid., Cent. f. Bakt. O., Nov. 24th, 1905. [94] Fanoni: Medical News, New York, 1905, 88, 678. [95] Taylor and Ballenger: Journal of the American Medical Association, 1905, 20. [96] Gordon: Am. Med., July 22nd, 1905. [97] Paltauf: ref. [93]. [98] Lipschütz: D. M. W., 1905, 46. [99] Pielicke: ref. [93]. [100] Richards and Hunt: THE LANCET, Sept. 30th, 1905, 962. [101] Dalous: Jl. Mal. Cut. et Syph., 1905, xvii., 481. [102] Zabolotny: ref. [94], and M. M. W., 1905, 1698. [103] Neisser (with Baermann and Halberstädter): D. M. W., 1906, 1, 2, 3. [104] Thibierge and Ravant: Annales de Dermatologie et de Syphilographie, July, 1905. [105] Pollio and Fontana: Gazzetta degli Ospedali e delle Cliniche, Mil., 1905, 109, 1143. [106] Risso and Cipollina: Riforma Medica, 1905, 34, 938. [107] Pascalis: Il Policlinico, Rome, 1905, 12, 861. [108] Veillon and Girard: Presse Médicale, Paris, 1905, 104, 839. [109] Moncorvo 6ls: ref. Presse Médicale, Paris, 1905, 104, 840. [110] Bodin: Presse Médicale, Paris, 1905, 102, 823. [111 111a] Paschen: M. M. W., 1905, 932, 2394. [112] Harvey and Bousfield: Journal of the Royal Army Medical Corps, 1905, ii., 263. *Yaws.*—[113] Castellani: Journal of Tropical Medicine, August, 1905. [114] Ibid., B.M.J., 1905, Nov. 18th. [115] Ibid., D. M. W., 1906, 4, 132. [116] Wellmann: Journal of Tropical Medicine, 1905, Dec. 4th. [123] Hutchinson: Sydenham Society's Atlas. *Staining.*—See [7 43 60 85 87 ; 89 92 112, 117] Giemsa: D. M. W., 1905, 28 (with references). [118] Ibid., D. M. W., 1905, 32. [119] Reitmann: D. M. W., 1905, 25, 997. [120] Hirschberg: Journal of the American Medical Association, 1905, 45, 1088. [121] Weitlauer: M. M. W., 1905, 47, 2293. [122] Dudgeon: THE LANCET, August 19th, 1905, 522. [123] Davidsohn: B. K. W., 1905, 31. [124] Harvey: Journal of the Royal Army Medical Corps, 1905, iii., 409. *Spirochæte in other conditions.*—*Vaccinia.*—[125] Bonhoff: B. K. W., 1905, Sept. 4th. [126] Süpfle: M. M. W., 1905, 38, 1843. *Gangrene, &c.*—[127] Polland: W. K. W., 1905, Nov. 23rd. [128] Buday: Ziegler's Beiträge, October, 1905. *Cytorrhyctes Luis.*—See [2 4] and also [129] Schülze: B. K. W., 1905, 32, 653. [130] Freund: M. M. W., 1905, 1819. [131] Merk: W. K. W., 1905, 926.

Edinburgh.

RUPTURE OF THE UTERUS WITH ESCAPE OF THE CHILD INTO THE ABDOMINAL CAVITY; DELIVERY PER VIAS NATURALES; RECOVERY.

BY THOMAS HUNTER, M.B. GLASG.,
CAPTAIN, I.M.S.; CIVIL SURGEON.

THE patient was a Hindu of a labouring caste, aged about 24 years, a well-built healthy woman, with a history of four previous normal labours. From such patients a correct detailed history can rarely be obtained of what has occurred before the arrival of skilled observation, but apparently in this case labour came on at full term about 11 P.M. on Nov. 27th, 1905, and the pains were ordinary and the case usual until about 2 or 3 A.M. on the 28th. About that hour the waters burst and bearing-down pains began. These lasted a very short time and after not more than four bearing-down pains the pain completely ceased and about ten minutes after the cessation the placenta was delivered. With the birth of the placenta there was very profuse bleeding and as this continued the friends took the woman to the hospital. No history of injury at any time could be elicited.

On admission to hospital at 7 A.M. on Nov. 28th the patient was pale and collapsed and the pulse at the wrist could not be felt. Her temperature, which was at first 97° F., rose in the evening to 101·4°, and the pulse-rate was found to be 150 in the course of the day. She seemed to be suffering some pain and there was extreme tenderness over the abdomen, palpation of which at once revealed the fact that the fœtus seemed to be just under the abdominal wall. The placenta was lying outside the vagina attached to the cord. A hypodermic injection of strychnine, digitalin, and ergotin was given at once and the external genitals were thoroughly cleaned. Examination per vaginam was then made and a large irregular tear in the left posterior region of the uterus, and beginning apparently at the external os, was detected with the uterus firmly contracted behind the symphysis and the child in the abdominal cavity. A hot douche of sterilised normal saline solution was then given and the woman was put under chloroform. Examination then showed that the rent was large enough to allow the hand to pass freely into the abdominal cavity and to feel the child lying with the limbs near the rent.

The present-day opinion that the best treatment in such circumstances is laparotomy, cleaning of the abdominal cavity, and removal of the uterus, was borne in mind; but the collapsed condition of the patient was such that to have practised this, it was concluded, would inevitably have resulted in death. On the other hand, the natural passages were roomy and the tear was judged extensive enough to allow a normal child to pass with little further damage. At the same time it was remembered that, with no history of injury, abnormality in the child was almost certainly the cause of the rupture. The head of the child then was felt for and when it was reached the abnormality was found to be hydrocephalus. Perforation of the head and delivery per vias naturales were decided on. The feet were drawn together through the tear followed by the trunk with the upper limbs. The head, steadied over the tear by a hand in the vagina and two hands over the abdominal wall, was then pierced by a perforator. A rush of fluid followed and the child was easily delivered. After the delivery the abdominal cavity was thoroughly washed out with sterilised normal salt solution at a temperature of 100°. To do this a hand was passed in through the tear and the nozzle of the douche guided by it and with this hand in the abdominal cavity the abdominal contents were well washed. A piece of omentum which presented at the mouth of the vagina was replaced by the nozzle of the douche. Finally, a gauze drain was passed into the abdominal cavity through the tear, a pad was put on over the vagina, and a tight binder was applied.

The patient's condition was critical for the first two days, with a temperature rising to 103·4° F. and a pulse-rate of about 150. The gauze drain was changed and a hot douche of sterilised saline solution was given twice a day and the patient was kept on ten minim doses of liquor strychninæ hypodermically every four hours. On the morning of Nov. 30th her condition was much better and her temperature was 100°. The saline douche was replaced by an izal douche. On the evening of the same day her temperature rose to 101° and tympanites developed but rapidly yielded to turpentine stupes. On Dec. 1st her temperature was 99·6° in the morning and 102° in the evening, the pulse-rate being about 120. On the 2nd diarrhœa supervened, remaining troublesome for two days but disappearing on treatment with five grains of Dover's powder and ten grains of subnitrate of bismuth every six hours. Her temperature was 99·2° in the morning and 100·2° in the evening. On the morning of the 3rd the temperature touched normal for the first time after delivery but there was still an evening rise—namely, to 99·0° on the 3rd, 4th, and 5th; to 101·0° on the 6th; to 99·8° on the 7th; and to 99·0° on the 8th. The temperature remained normal from the 9th and the progress of the case from that date was uneventful. The patient left hospital in good health on the 20th. She returned for examination on Jan. 10th, 1906, and the uterus was then found to be normal in size and position and the only remnant of the tear that could be detected was a laceration through the whole thickness of the cervix in the left posterior quadrant extending as far as the fornix.

As an interesting indication of the mental activities of the class to which the patient belonged it may be mentioned that when the child, which had a cleft palate and a double harelip, was seen by the relatives its deformities and its large head inspired them with awe and with the belief that it was a demon that had been delivered from the patient and the subsequent occurrence of tympanites caused great consternation as they believed that the demon had re-entered into possession of the mother.

Rae Bareli, Oudh.

A SERIES OF FOUR CASES OF MULTIFORM STREPTOCOCCIC INFECTION APPARENTLY ALL DERIVED FROM THE SAME SOURCE.

BY ARTHUR LATHAM, M.A., M.D. OXON., F.R.C.P. LOND.,

PHYSICIAN TO ST. GEORGE'S HOSPITAL AND ASSISTANT PHYSICIAN TO THE HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, BROMPTON;

E. PERCY PATON, M.D., M.S. LOND., F.R.C.S. ENG.,

ASSISTANT SURGEON TO WESTMINSTER HOSPITAL;

AND

H. D. BRICE, M.R.C.S. ENG., L.R.C.P. LOND.

CASE 1.—A girl, aged ten years, came under the care of Mr. Brice on August 7th, 1905, and was found to be suffering from an ordinary mild attack of facial erysipelas. This had started on the right side of the nose and had gradually spread on to the forehead and scalp and down the left side of the face. The temperature was never very high and at the end of about 10 days the child was convalescent; the ordinary remedies usual in such a case were applied and there was never any anxiety as to the issue. The child was nursed by her mother who was throughout apparently in good health.

CASE 2.—On August 26th, 1905, Mr. Brice was asked to see the mother of the patient, Case 1, a woman about 35 years of age. She complained of great pain in the right shoulder which was found to be tender and swollen on its anterior aspect just below the clavicle but there was no redness of the skin nor any abrasion nor breach of surface. The temperature was a little raised and the pulse was somewhat increased in frequency. The patient was seen every day for the next four days, during which time the swelling about the shoulder developed into a red, acutely inflamed area of skin and subcutaneous tissue which rapidly spread down the right side of the chest and ultimately extended from the shoulder to the hip and from the nipple line in front to the spine behind. The temperature remained raised but was not very high, being usually about 102° F., the pulse-rate being about 120. On the 31st she was seen by Mr. Paton. She was then very delirious, attempting to get out of bed and proving very troublesome to feed. The extent of the inflammatory area was much as has been mentioned above: the parts inflamed were œdematous and brawny but there was no sign anywhere that there was any formation of pus, the swelling was only moderate in amount, and there was no tension of the skin. It was decided that the case was almost certainly one of streptococcic infection and arrangements were made for the injection of anti-streptococcic serum, while at the same time the local condition was treated with fomentations. It being late in the evening the serum was not obtained until the next day when ten cubic centimetres, prepared by Messrs. Parke, Davis and Co., were injected and the same again the following day. It proved difficult to give the injections as often as might have been desirable owing to the active delirium of the patient. The general condition, however, got steadily worse while the local signs somewhat increased, and on Sept. 3rd Mr. Paton again saw the patient, and though the swelling was still only moderate and there was practically no tension several incisions were made into the swollen area. Only a little serum and blood were let out, the tissues being found infiltrated with inflammatory products and on the way to become necrotic; there was no pus. A specimen of the blood was now sent to the Lister Institute and a report was received stating that a pure culture of a streptococcus had been obtained, and in view of this finding the injections of anti-streptococcic serum were still continued, 10 cubic centimetres being given on Sept. 3rd, 20 cubic centimetres on the 4th, and 10 cubic centimetres on the 6th. No amelioration followed any of the injections and the patient died on the 7th, 12 days from the onset of the disease. There was no necropsy.

CASE 3.—The patient in Case 2 had been nursed by her sister and a trained nurse and on the night before her death (Sept. 6th) her sister (the patient in the present case, whose age was 38 years) began to feel ill and was obliged to lie up. Mr. Brice saw her and found her to have a rise of temperature to 102° F., and she was complaining of pain and tenderness in the right axilla, though there was little to be seen to account for her symptoms and no breach of surface could be found anywhere. Her general condition, however, became worse during the next two days and she was admitted into Westminster Hospital under the care of Mr. Paton on Sept. 9th. On admission the temperature was 104°, the pulse-rate was 120, and the patient appeared to be generally ill. There were no very definite physical signs save a little ill-defined swelling in the right axilla and over the right shoulder, which was rather painful on movement and tender to touch; the skin was not reddened, and no breach of surface could be found on the hand or arm, though she said that she had abraded one of her fingers a week before admission. The temperature fell on the next day to 102° but there was no change in the local condition. In view of the patient in Case 2 being the possible source of infection 10 cubic centimetres of anti-streptococcic serum were injected and a blood culture and blood count were made. The blood count showed a leucocytosis of 17,000 and a streptococcus was obtained in the culture, which, however, had become slightly contaminated. The injections of serum were repeated the next three days and the temperature gradually fell to 100°; the general condition also improved. Without the temperature again rising to more than 100°, however, the swelling in the axilla, after apparently inclining to disappear, began again to increase in size, and on Sept. 19th an incision was made evacuating a considerable quantity of pus which contained streptococci in pure culture. From this time the patient steadily improved, save that a small abscess formed in one of the glands at the base of the posterior triangle of the neck which was incised on Sept. 26th. She left the hospital well on Oct. 14th.

CASE 4.—The father of the patient mentioned in the first case, a man, aged 42 years, was admitted into St. George's Hospital on Oct. 3rd, 1905, under the care of Dr. Latham. He complained of soreness of the throat with some pain on swallowing. He gave no information of the cases just mentioned beyond stating that his wife had recently died with "something wrong in her side." The history of his own illness was as follows. On Sept. 28th he had had a slight rigor and on the next day he developed a sore-throat and felt so ill that he stayed in bed. On admission the patient was found to be anæmic; the voice was husky, the tongue was furred, and the teeth were good but very dirty. There was much injection of the pharynx and the soft palate, and the tonsils were acutely inflamed with small yellow patches scattered over them. The temperature was 101·5° F. and the pulse was 100. No other physical signs were observed. Calomel, potassium chlorate as a gargle, and a salicylate mixture were prescribed. On the following evening the temperature was normal but the condition of the throat showed no improvement. On the 5th the temperature rose to 104° and there was some delirium. On the 6th the patient's condition was worse, there was some cyanosis, the pulse-rate and respiration were increased, and there was pain at the epigastrium. Examination of the abdomen revealed nothing abnormal. A faint double murmur was heard over the cardiac area to the left of the sternum. The report of an examination of the blood made on the previous day showed the presence of a large number of streptococci. On the 7th the condition of the patient was worse and there was marked cardiac failure, with delirium. The murmur over the cardiac area was more marked. During the day the patient vomited several times and complained of some abdominal pain. The abdomen was distended but not tender or rigid; friction sounds were heard over its entire area. There was some diarrhœa. The cardiac weakness and delirium gradually increased and death took place early on the morning of the 8th. Free stimulation with alcohol and strychnine had been prescribed on the 5th and subsequent days; no serum treatment was employed as the condition of the patient was hopeless before streptococci had been found in the blood.

Post-mortem examination.—Severe suppurative tonsillitis, with acute pharyngitis. Acute inflammation of the larynx, a small open abscess on the left of the aryteno-epiglottidean fold, and an abscess in the right fold. Recent fibrinous pericarditis was found over the right auricle; the rest of the membrane was clear. The valves of the heart were healthy and the cavities were of normal size. There was some fibrosis of muscle. The aorta was atheromatous.

Severe purulent peritonitis was present, with pools of pus in the pelvis and between the liver and the stomach. The intestines were distended. In the liver, the spleen, the pancreas, and the kidneys there was cloudy swelling and the spleen was very swollen and grey.

Remarks.—We have thought that the four cases above described are worth recording as a series, in which one form of streptococcus appears to have been the cause, but in which the nature of the illness produced was different in each case. This shows that though the form of the invading micro-organism may be the same in two cases it by no means follows that the type of infection or its virulence will be of the same nature as the source from which the infection was derived. Ordinary erysipelas is well known to be due to a streptococcus. In the above series of cases a streptococcus would no doubt have been found in the erysipelas case if it had been looked for. It is particularly interesting, however, to note that the other cases which there can be little doubt were infected from the case of erysipelas did not develop this disease, but in one case a virulent form of cellulitis, without suppuration, accompanied by general septicæmia, in a second case a local infection with suppuration, and in the third case an acute septicæmia with suppuration in the peritoneum, primary infection being apparently in the tonsils. There is, of course, another reasonable explanation of the source of infection in these cases—namely, that they were all due to defective sanitation in the house in which the patients lived.

A NOTE ON LOCAL ANÆSTHESIA FOR COSMETIC OPERATIONS.

BY LOUIS E. STAMM, M.D.LOND., M.R.C.S. ENG.

MANY operations of the major class have now been successfully and painlessly performed under local anæsthesia by the hypodermic injection of eucaine and adrenalin solutions but it does not seem probable that this form of anæsthesia will supplant to any extent the use of general anæsthetics for operations of any magnitude, although it may continue to have a limited field of employment.

In the first place, it is much more satisfactory both for the surgeon and for the patient that the latter should be in a state of unconsciousness during the proceedings. An operation does not always proceed on absolutely smooth lines. Any sudden activity and bustling among the surgeons, assistants, or nurses as may occur on a severe hæmorrhage or other unexpected incident, or some discussion among the surgeons in the course of the operation as to alternative courses of procedure, would almost certainly arouse alarm and possibly mistrust in the mind of the patient—a thing which would be in itself highly undesirable, even if it had no direct deleterious effect. Then, again, with local anæsthesia it is essential that one should define accurately beforehand the region and tissues of the body that will be involved in the operation so as to render them anæsthetic, and this cannot always be done. It not infrequently happens, in abdominal operations for instance, that the incision first made must be considerably enlarged, or that even a second incision be made in a different region of the abdomen. On the other hand, in cases in which there are strong contra-indications against the administration of a general anæsthetic (serious heart or lung complications or an inveterate prejudice on the part of the patient to a general anæsthetic), and in which an operation is a question of life and death, local anæsthesia has already proved a valuable substitute.

The real sphere, however, of local anæsthesia lies in the operations of minor surgery and I am convinced that the profession has not yet fully realised its value and usefulness in this respect. The general practitioner has been described as the specialist in minor ailments and as such I am emboldened to say something about the efficacy of local anæsthesia in minor operations. By minor operations I mean especially operations involving only skin-deep incisions, such as the removal of sebaceous cysts, lipomata, fibromata, and other cutaneous or subcutaneous excrescences. It is a matter of surprise to me that in view of the facility with which these disfiguring marks can now be removed people should be content to retain them as if they were a proud possession. One has only to pay a little attention to the matter to find that in any group of people in a public place quite a large proportion will present a wen or a wart or some other excrescence in a conspicuous part of their physiognomy to offend the eye of the beholder. It cannot be that they would not gladly part with such distinctions. It seems more reasonable to assume that they do not seek their removal, believing that they must either submit to a considerable amount of pain or go through all the paraphernalia involved in an operation, be it ever so small, under a general anæsthetic. There is now, however, the alternative course—namely, to have the excrescence removed under local anæsthesia. The procedure is so simple and the inconvenience so small that I can say from experience if the victims of these disfigurements were informed of this alternative by their medical advisers they would gladly submit to the operation and be grateful to them for it.

The technique of these small operations is very simple and may be described in a few words. It is only necessary to inject a few minims of the eucaine solution around the intended incisions, and therefore a much stronger solution can be used than is usually employed for more extensive operations. I have used solutions as strong as 4 per cent. If a minute quantity of *active* adrenalin be added a 1 per cent. eucaine solution is quite sufficient. My experiences with the various adrenalin preparations in the market have been very unsatisfactory and their addition to the eucaine solution has failed to have the desired effect of increasing the local anæsthesia of the eucaine. It seems that the adrenalin easily becomes inactive by rapid oxidation. This difficulty has now been overcome by making up 1 per cent. eucaine solution with a little active adrenalin in sealed tubes. It is prepared in this way by Parke, Davis, and Co. under the name of "eudrenine" and gives very satisfactory results. The skin of the part having been thoroughly cleansed and prepared, a few minims of this eudrenine solution are injected with an ordinary hypodermic syringe, previously sterilised, in two or three places around the intended incisions, care being taken to inject the solution in the course of the nerves of supply to the part. From 15 to 20 minutes should be given for the eucaine to have its full effect and the incisions may then be made and the operation carried out. A good nurse is all that is required as an assistant. A sealed dressing can usually be applied to the small wound and the patient is able to resume his usual avocation almost immediately afterwards.

Streatham, S.W.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Intracranial Tumour, with Special Reference to Ocular Symptoms.—An Improved Method of Performing the "Pancreatic" Reaction in the Urine.

A MEETING of this society was held on March 13th, Mr. J. WARRINGTON HAWARD, the President, being in the chair.

Mr. ARTHUR W. ORMOND read a paper on 100 cases of Intracranial Tumour, with special reference to the ocular symptoms. The paper was based on abstracts of 100 cases of cerebral tumour taken consecutively from the reports of Guy's Hospital and was followed by a short review of the leading theories relating to the association of optic neuritis and cerebral tumour and finally Mr. Ormond's conclusions as to the causation of neuritis. These 100 cases had all been treated in the wards of Guy's Hospital and, with a few exceptions, post-mortem examinations had been made. In 70 of the cases optic neuritis was present; in 17 no note was made of the condition of the discs in the medical report; in five cases the optic nerve was directly pressed on and atrophy occurred without any preceding neuritis. Of the remaining cases two gave no clinical symptoms of cerebral tumour at all, two had very insufficient clinical accounts, and the remaining three were the only ones about which it was possible to maintain that no optic neuritis existed during the course of the illness. That the cases were so few in which optic neuritis

was absent suggested that optic neuritis existed as a rule in all cases of intracranial tumour. The neuritis in such cases might be caused either by irritation due to some chemical or bacteriological product in the blood or cerebro-spinal fluid, or by the effect of a general increase of pressure within the skull, which would produce an œdema of the optic nerve tissue at the optic disc. In most of these 100 cases increased intracranial pressure was present. Headache, fits, and vomiting were recorded as almost constant symptoms in the cases which were observed sufficiently long for a history to be obtained. In 37 cases the ventricles were partially or entirely dilated. In cerebellar tumours the existence of even a moderately sized growth would lead to some interference with the veins of Galen, or with the passage of fluid through the iter, and so a permanent or temporary increase of intra-ventricular pressure would be produced. On the other hand, the size of the tumour was sufficient in many cases to account for a general increase of pressure. The way in which a small tumour might produce a general increase of intracranial pressure was considered in the light of Leonard Hill's theory of increased intracranial pressure following traumatism, and also in connexion with the more recent work by W. B. Cannon.[1] Hill asserts that the brain tissue itself becomes œdematous. Owing to the obliteration of vessels in the immediate neighbourhood of the foreign body within the skull there would be an increase of pressure in the veins and capillaries, and, finally, an œdema. Cannon criticised Hill's conclusions and attributed the increased intracranial pressure to the excessive osmotic pressure present in brain tissue deprived of its proper blood-supply. Without pressing the association of increased intracranial pressure and optic neuritis too far, or, in other words, without assuming that they stand in the relationship of cause and effect, it may certainly be said that the existence of increased pressure within the skull definitely altered the ophthalmoscopic appearance of the disc. With the onset of acute symptoms of pathological pressure within the skull the neuritis did become increasingly marked. It was suggested that optic neuritis might be primarily due to some toxic or irritant product in the cerebro-spinal fluid which would produce at first an effect upon the vascular system whereby the central retinal vessels would be affected and a condition of optic disc congestion produced. This condition would lead to no organic change in the nerve nor to any loss of visual acuity unless increased intracranial pressure supervened; then papillitis would result, and, if the nerve head became strangled, there would be a consequent atrophy. Mr. Ormond reviewed the principal "mechanical" and "inflammatory" theories and found an analogy between the changes recently shown as occurring in the posterior columns of the spinal cord in tabes dorsalis and the early changes in neuritis. He concluded that a hypothetical toxin would most satisfactorily explain all the experimental, pathological, and clinical facts known about optic neuritis in association with cerebral tumours, and concluded that optic neuritis was primarily produced by toxins due to the presence of a tumour within the brain and accentuated by the existence of increased intracranial pressure. Nystagmus was found in 14 cases, two being associated with tumours of the temporo-sphenoidal lobe. It was noticed that the condition of the pupils varied considerably, being dependent in the majority of the cases upon the state of the optic nerve. In the early stages the pupils were contracted, but as the neuritis increased and the conductivity of the nerve was depressed the pupils became dilated until atrophy having supervened they were widely dilated and fixed. The condition of the knee-jerks in the cerebral cases was normal in ten, absent in five, increased in eight, and diminished in one; in five cases they varied on the two sides. In the cerebellar cases the knee-jerks were found to be increased in some cases, absent in some, and in some normal. With regard to operative interference, brilliant results were obtained in one or two instances but in the majority of cases where an operation was undertaken the condition of the patient was not materially improved. A special note was made in reference to the duration of the illness, dating from the first well-marked symptom. In two instances the tumour gave no sign of its existence during the patient's life. In the other cases the period varied from a few hours to several years, but 56 of the cases died within six months or less from the onset of the first symptom. In one case optic neuritis had been observed nine years previously, but no record could be obtained of the condition of the optic discs between that time and the three months previous to death. In 11 cases nothing could be determined as to the length of period, as the onset of the symptoms was so vague.—Dr. HOWARD H. TOOTH said that the cause of optic neuritis was a subject of extreme difficulty and he had never been able to come to any definite conclusion. In small tumours of the cerebellum marked optic neuritis might be present, whereas very large tumours might be present in the frontal lobes without giving any optic neuritis. He thought that if neuritis was due to a toxin, such as choline, then optic neuritis should occur in general paralysis of the insane; such was, however, most unusual.—Dr. A. T. WHITING said that Mr. Ormond had made out in his paper that neuritis occurred in all but 3 per cent. of cases. No authorities had given such a high percentage and Gowers and Allan Starr both gave 20 per cent. as the number in which neuritis was not found. In two out of three cases he had recently seen no neuritis had been present and in both at the necropsy large tumours were present in the cerebral hemispheres.—Dr. F. E. BATTEN alluded to the statement made in the paper that the degeneration of the posterior roots, which was present in cases of cerebral tumour, was due to a toxic process and asked if such were the case how Mr. Ormond explained the fact that it was the cervical roots which were commonly involved when, as in other conditions which were obviously due to toxic processes, it was usually the lumbar and sacral roots that were affected.—Dr. H. S. FRENCH pointed out that grave doubt had been thrown on the presence of choline in the blood as shown by the platinum chloride method and hence the observation of Mott and Halliburton could hardly be quoted in support of the view advocated by Mr. Ormond.—The PRESIDENT suggested that since the cerebral circulation was impeded it was not improbable that thrombosis might in some cases account for the neuritis. He was of opinion, however, that several factors were at work in the production of neuritis and no one cause would explain all cases.—Mr. ORMOND, in reply, said that he had tried to produce optic neuritis in rabbits by the injection of choline but without success.

Dr. P. J. CAMMIDGE read a paper on an Improved Method of Performing the "Pancreatic" Reaction in the Urine. The method now described differed from that originally published in March, 1904, chiefly in the fact that the large amount of glycuronic acid present in the urine in most cases of pancreatic disease was removed by treatment with basic lead acetate, thus allowing a sugar, which appeared to be constantly obtainable in inflammatory conditions, to be more readily recognised. The test now depended upon a single preparation and not, as formerly, upon the comparative results of two. In a table were shown the results of the examination of 100 specimens of urine by the improved method. Of these 29 gave a positive result and 71 gave no reaction. The clinical reports on the cases from which the former were derived stated that there was evidence of pancreatic inflammation in all. The latter were obtained from patients suffering from conditions from which pancreatitis had to be diagnosed, and also included a number of normal and pathological urines employed as controls.—Mr. A. W. MAYO ROBSON said that he had operated on a large number of cases in which the pancreatic reaction had previously been done and he was convinced of the great aid which was afforded by this test. Criticisms had been made of the test on very imperfect knowledge of the method of performing it. The crystals had now been isolated in sufficient numbers to ascertain their melting point and their rotatory power. They were, in fact, a form of sugar. He had received the greatest help from this test in cases of involvement of the common duct, for if the pancreas was involved longer drainage was necessary. Inflammatory disease might be present in addition to malignant disease and hence the reaction might be present even in malignant disease. He mentioned the case of an old man in whom the test was of the greatest service. The man had deep jaundice suggestive of malignant disease. Analysis of the urine showed the presence of the pancreatic crystals. Gall-stones were found to be present and removed and the man made a perfect recovery. The urinary evidence was correct in a very large number of the cases in which it had been applied and the test was of the greatest value as an aid to diagnosis.

[1] American Journal of Physiology, vol. vi.

CLINICAL SOCIETY OF LONDON.

The Relation of Traumatic Diabetes Insipidus to Glycosuria.—Post-traumatic Hæmorrhage from the Superior Longitudinal Sinus without Fracture of the Skull.—Dilatation of the Stomach following Hour-glass Contraction.—Associated Malformations with Transposition of the Viscera.

A MEETING of this society was held on March 9th, Mr H. H. CLUTTON, the President, being in the chair.

Dr. HERBERT S. FRENCH and Mr. C. B. TICEHURST narrated a case illustrating the Relation of Traumatic Diabetes Insipidus to Glycosuria. The patient, a man, aged 44 years, was shown at the meeting. Five years ago he had been thrown off his bicycle, remaining unconscious for 14 days. Cerebro-spinal fluid dripped from his nose. On recovery bilateral temporal hemianopsia and ocular pareses showed that he had fractured the base of his skull in the region of the optic chiasma. Previously to the accident he had been perfectly well but after the injury he suffered from extreme polyuria and thirst, passing up to 10,000 cubic centimetres of pale urine, of specific gravity 1004–6, free from albumin and sugar. The expectation that the "sugar centre" in the medulla was also injured led to an extensive metabolism research in which all food and excreta were analysed.[1] By increasing the carbohydrates in the food it was attempted to produce glycosuria. Dextrose, starch, and cane sugar were all assimilated well, up to as much as 700 grammes of dry carbohydrate in 24 hours. No sugar could thus be made to appear in the urine. Two years later, however, glycosuria developed spontaneously. The urine remained of comparatively low specific gravity. Careful dieting diminished the sugar passed but did not entirely prevent glycosuria. Both acetone and diacetic acid were present in the urine as well as sugar when he was carefully dieted. On ordinary diet there were no acetone and diacetic acid. Throughout the case there had been a peripheral limitation of the visual fields with hemianopsia. The patient at the present time felt weak and was unable to carry on active work; but his weight was well maintained and if he could have seen better he could have carried on an occupation which was not very strenuous. Similar cases were quoted from the literature but none exactly like this one could be found. Injury as a cause of either form of diabetes was not very common and the association of the two forms together was very rare. M. Brouardel and M. Richardière[2] collected 33 cases of traumatic diabetes and dealt with the subject in its medico-legal aspect.—Dr. A. E. GARROD said that it was very difficult to throw any light on the pathology of diabetes insipidus. The case recorded was curious in the long duration and the tendency to recovery exhibited by the glycosuria. Traumatic glycosuria usually lasted only until the glycogenic "reservoirs" were emptied.—Dr. E. FARQUHAR BUZZARD asked whether there were any recorded cases of localising symptoms, such as hemianopsia due to injury associated, as in this case, with glycosuria.—Dr. FRENCH, in reply, said that there were two such cases as those referred to by Dr. Buzzard recorded in literature.

Dr. FARQUHAR BUZZARD and Mr. JOSEPH CUNNING narrated a case of Post-traumatic Hæmorrhage from the Superior Longitudinal Sinus without Fracture of the Skull and Recovery after Operation. On April 1st, 1905, a man, aged 25 years, fell on the back of his head and inflicted a small scalp wound which healed without trouble. A fortnight later he complained of continuous and increasing headache and on examination showed no physical signs except an extensor response and a diminished abdominal reflex on the left side. In the course of the next few days he developed complete left hemiplegia, hemianopsia, and hemianæsthesia, with stupor, slow pulse, and vomiting but no optic neuritis. On April 18th he was trephined over the right post-parietal region and a large accumulation of blood was found beneath the dura mater, rapid hæmorrhage taking place from the neighbourhood of the superior longitudinal sinus. Forceps were placed on the bleeding point and the patient was given a saline infusion. On April 20th the forceps were removed and on the 22nd improvement in the paralytic condition set in. This had progressed to a complete recovery. Reference was made to the extreme rarity of bleeding from the superior longitudinal sinus without fracture of the skull and to the slow development of symptoms as its result in this case. The slowness of the recovery was probably due to œdema of the brain substance. The patient was exhibited at the meeting; the hole in his skull still existed.—Mr. A. PEARCE GOULD had seen one somewhat similar case in which the longitudinal sinus was opened; the patient recovered without paralytic symptoms.

Mr. J. E. SPICER (introduced by Dr. PERCY KIDD) exhibited a pathological specimen showing Unusual Dilatation of the Stomach following an Hour-glass Contraction. The patient, a woman, aged 37 years, had suffered from dyspepsia more or less continuously for 20 years and had vomited blood on three occasions. On Feb. 15th, 1906, she was admitted to the London Hospital under Dr. Kidd with an increase in the severity of her symptoms and signs pointing to dilatation of the stomach. Four days later she suddenly developed general peritonitis and died in three hours. The post-mortem examination showed a constriction in the stomach in the neighbourhood of the pylorus. The peritoneal cavity contained between two and three pints of a thick green fluid resembling thin spinach which was oozing from a perforation in an old ulcer situated in the constricted portion. The proximal portion of the stomach was much smaller than normal and contained about ten ounces of partly digested milk. The distal portion was much larger and contained several pints of thick green fluid such as was found in the general peritoneal cavity. It was this sacculus which had formed the large swelling that had been felt during life on the left side of the abdominal cavity extending downwards to the inguinal region. Its axis lay roughly at right angles to that of the proximal portion with the perforation on the anterior wall of the connecting passage. The opening into the duodenum was found in the outer wall of the angle, close to the perforation. The perforation had been closed over by the thin edge of the left lobe of the liver, the adhesions between the two having recently separated and led to perforation.—The PRESIDENT remarked with surprise on the fact that a patient had spent 20 years of her life suffering from dyspepsia without being operated on.—Mr. E. W. ROUGHTON also commented on the absence of surgical interference, both in the earlier phase when the case was one of chronic dyspepsia and also when perforation had taken place.—Dr. KIDD replied that the patient was only in the hospital for four days before death. Remarking on how the hour-glass contraction had taken place, he said it had been suggested that the sacculus was a dilatation of a congenital cul-de-sac of the stomach adjacent to the pylorus.

Dr. GARROD and Dr. F. LANGMEAD contributed the notes of a case of Associated Congenital Malformations, including Transposition of the Viscera. The patient was a female infant, aged nine months, who was admitted into the Hospital for Sick Children, Great Ormond-street, under Dr. Garrod, for wasting and constipation. An operation had been performed for imperforate anus when the child was 24 hours old. She was a badly nourished, ill-developed child and was pale but showed no cyanosis or clubbing of the fingers. Her appearance was that characteristic of the Mongolian type of idiocy, from which it only differed in that the back of the head was slanting and not flat. Examination revealed the heart to be situated on the right side and the liver on the left—an observation confirmed by a skiagram which was exhibited. A systolic murmur was heard over the normal mitral and aortic areas, over the sternum, and at the back. At the necropsy the heart, as well as being misplaced, was found to be malformed. There were a patent foramen ovale, an imperfect septum ventriculorum, and a patent ductus arteriosus. The upper lobe of the right lung was missing. Of the four congenital malformations present—viz., imperforate anus, congenital heart lesion, complete transposition of viscera, and idiocy of the Mongolian variety, the first two were definitely malformations of arrest and none of them were malformations of excess. It was considered that transposition of viscera was not infrequently associated with other malformations and reference was made to a paper written by Dr. Garrod 11 years ago, in which were quoted several cases in which transposition was accompanied by malformations in addition to congenital heart lesions. This case afforded an example of an association of quite special frequency—viz., congenital heart lesions with Mongolian idiocy, an association pointed out by Dr. Garrod in 1899 and

[1] Guy's Hospital Reports, vol. lvii., 1902, p. 133.
[2] Annales d'Hygiène Publique et de Médecine Légale, vol. xx., Paris, 1888.

confirmed by a number of other observers since. It was in the out-patient department of children's hospitals that this association was seen, for such children seldom survived the first year or two of life, and so it was seldom observed in asylums among Mongolian idiots who had passed the age of five years.—The PRESIDENT said that in his experience malformations were more frequent at the beginning or at the end of a series of pregnancies. For instance, he had met with congenital hip deformities and harelip deformities among the earlier births before the mother had got into the full swing of child-bearing, or later in life when pregnancies were too frequent and the intervals for recovery were insufficient.—Dr. GARROD remarked that the principle of heredity advanced by the President was somewhat novel and distinct from the Mendelian theories of heredity now current.

MEDICAL SOCIETY OF LONDON.

Clinical Features of Colitis.—Syphilis in Medical Practice.

A MEETING of this society was held on March 12th, Sir LAUDER BRUNTON, the President, being in the chair.

Dr. H. A. CALEY read a paper on the Clinical Features of Colitis. He commenced by pointing out that colitis in one or another of its several forms was far more common than was at present recognised, notwithstanding the increased attention which had been paid to the subject in recent years. Careful differentiation was the first essential but owing to the inadequacy of the pathological data available it was necessary to adopt an approximately accurate division into clinical types. Four principal types might be recognised:—1. Catarrhal or simple mucous colitis, which might be acute (primary or secondary) or chronic (irritative, atonic, or spastic). 2. Membranous or muco-membranous colitis. 3. Parietal colitis and pericolitis (including sigmoiditis, pericolitis sinistra, and perityphlitis). 4. Ulcerative, which might be—(*a*) endemic (e.g., tropical dysentery); (*b*) epidemic (e.g., "asylum dysentery"); or (*c*) sporadic, including primary and idiopathic and secondary varieties. Speaking of the characteristics of the several types Dr. Caley pointed out that in some cases the infection was chiefly confined to the colon, while in others it was part of a more general enteritis. Of chronic catarrhal colitis there were two principal forms—(1) those characterised by loose mucous evacuations or periodical diarrhœa and (2) cases characterised by constipation with excess of mucus in the dejecta (atonic and spastic types). This latter group was especially important in that it might merge insensibly into the membranous type. It was also important in relation to other intestinal disorders, notably atonic dilatation of the colon, appendicitis, and enterospasm. In relation to appendicitis chronic colitis was important as an antecedent, constituting the connecting link between chronic constipation and the appendicitis which ultimately developed. It was also a simulator of appendicitis, especially of the chronic type of the latter, with which it was not uncommonly associated. Acute attacks of enterospasm might also be referable to simple catarrhal colitis, though more commonly to the muco-membranous type, masses of mucus, with or without fæcal concretions, setting up irregular peristalsis which resulted in acute enterospasm. The clinical characteristics of membranous colitis were then discussed and in connexion with its etiology facts were adduced to emphasise the importance of chronic constipation, the "arthritic" factor, and its close connexion with neurasthenic states. With reference to the clinical associations of membranous colitis stress was laid upon the liability to acute paroxysms of pain in addition to local symptoms of a more persistent kind. Parietal colitis and pericolitis were next referred to. The distinctive pathological feature of pericolitis was the spread of the infection through the submucous and muscular coats, thus involving the peritoneum and producing pain, tenderness, muscular rigidity, and induration as a result of the local peritonitis. If on the left side this condition was known as pericolitis sinistra; if in the region of the cæcum as perityphlitis in the strict sense as distinct from appendicitis. To avoid confusion the term pericolitis dextra was perhaps preferable. On account of its direct results pericolitis was important in relation to the differential diagnosis of obscure abdominal lesions. The characteristics of ulcerative colitis were briefly mentioned and Dr. Caley laid stress upon anomalous cases of this type. In this, as in all forms of colitis, for accurate diagnosis critical scrutiny of the symptoms, systematic investigation of the dejecta, and careful physical examination of the colon were indispensable.—Dr. T. D. SAVILL, referring to the difficulty of diagnosis in the earlier phases of colitis, drew attention to the intimate relation of this disease to neurasthenia and various nervous disorders. He had recently made an analysis from an etiological standpoint of 103 private cases which came under treatment for neurasthenia and no less than 40 per cent. of these had been due to antecedent incipient colitis and allied gastro-intestinal derangements. There could be no doubt that the bowel trouble was the antecedent and causal condition of the nervous symptoms, for the latter yielded to treatment directed to the former. It was in the earlier phases when nervous symptoms were met with, not in the later, and that was why some bath-physicians doubted their constant presence.—Mr. F. SWINFORD EDWARDS asked whether Dr. Caley had examined any of his cases with the sigmoidoscope and proctoscope, by which means the mucous membrane of the sigmoid flexure and rectum could be seen very well and applications could be made. He referred to a case of enterospasm of the colon causing obstruction, for which inguinal colotomy had been performed. For the treatment of colitis he advocated large enemata of various antiseptic solutions which in his experience were uniformly successful.—Dr. F. J. POYNTON doubted the wisdom of employing large enemata in cases where ulceration was suspected. He emphasised the relation of appendicitis to antecedent colitis and referred to three cases in children. He asked whether Dr. Caley had met with atony of the colon as a cause of tetany in childhood. Large and repeated doses of magnesium sulphate were, in his opinion, of great value in the treatment of colitis.—Dr. F. DE HAVILLAND HALL had always been struck by the close resemblance between colitis and the conditions described by Dr. Eustace Smith as "mucous disease in children." Discussing the treatment he advocated careful feeding, hot fomentations to the abdomen, and in suitable cases copious enemata of weak boric acid. He suggested the use of the term pancolitis in place of parietal colitis.—Dr. CALEY replied.

Dr. J. J. PERKINS read a paper on Syphilis in Medical Practice. He commenced by saying that surgical syphilitic diseases and parasyphilitic affections (which were consequences rather than direct results of the disease) would be excluded and he would confine his attention to congenital syphilitic manifestations and such results of the acquired disease as were amenable to antispecific medicinal treatment. The late date at which congenital lesions might appear (as late as middle life or even later) was insisted on. Fournier had recorded cases as late as 60 years. In discussing the diagnosis special stress was laid on the necessity of a thorough search for other signs of specific disease, and in this connexion the importance of the Argyll-Robertson pupil as a sign of syphilis was insisted on. Though no doubt due to cerebral syphilis, Dr. Perkins thought that it could be met with alone and apart from any general or progressive nervous disease. Passing on to the lesions of the different organs in detail, Dr. Perkins laid stress on the frequency of arterial thrombosis as a cause of nervous symptoms and on syphilis as a cause of neuralgia and other signs of nerve pressure. Syphilis might give rise to high fever, promptly amenable to specific remedies and to them alone. A series of cases in which gummata formed large abdominal tumours, liable to be mistaken for malignant growths, was narrated. Dr. Perkins believed that he had seen amyloid disease of the kidney disappear under appropriate treatment.—Dr. SAVILL recalled the fact that it was Lancereaux who had first described the occurrence of intermitting pyrexia both in the earlier and later stages of syphilis and that this had since been emphasised by the observations of the late Dr. J. S. Bristowe and the late Dr. Charles Murchison.—Dr. CHARLES W. CHAPMAN, referring to the question of history of primary lesion as an aid to diagnosis, emphasised the value of inquiring whether the patient had had a small itching sore of the penis.—Mr. G. PERNET drew attention to the fallacies of diagnosis in congenital syphilis, which might resemble that acquired in early childhood. In the acquired disease, also, he was not in the habit of placing much reliance on the history of the primary lesion either in men or women. Leucoplakia on the tongue was a valuable aid to diagnosis but it was also present in lichen planus and in the tongues of great smokers. Iodide of potassium, which relieved other diseases also, was not a specific for syphilis without mercury, which was the only true curative agent in syphilis.—Dr

POYNTON referred to two cases of cretinism which had supervened in syphilitic subjects and emphasised the evils of inadequate treatment by mercury.—Dr. R. PARAMORE agreed with the previous speakers that mercury was the only remedy which permanently influenced the disease.—Dr. DE HAVILLAND HALL also agreed on this point and referred to ascites and cirrhosis of syphilitic origin.—The PRESIDENT suggested that iodide of potassium sometimes did good by bringing into the circulation mercury that had been previously administered and stored in the tissues, but not otherwise. In regard to the dosage of the former drug he referred to a case of syphilitic nodes in which the patient had taken five-grain doses for years, recovery ensuring rapidly under 15-grain doses.—Dr. PERKINS replied.

OPHTHALMOLOGICAL SOCIETY.

Hereditary Influence in Myopia.—Microphthalmia with Congenital Tumour of the Brain.—A Scotometer for Diagnosis of Incipient Glaucoma, &c.

A MEETING of this society was held on March 8th, Mr. J. PRIESTLEY SMITH, the President, being in the chair.

Mr. C. A. WORTH read a paper on Hereditary Influence in Myopia. Though usually regarded merely as a refraction error, in a certain proportion of cases grave complications such as retino-choroiditis and detachment of retina quite overshadowed the original complaint. It was a matter of common observation that myopia was very frequently inherited. In a series of 687 cases examined by himself 654 were non-malignant and 33 were malignant. Of the first number 366 (56 per cent.) gave a history of myopia in parent, grandparent, uncle or aunt, or brother or sister. Of the 33 malignant cases, in only eight (24·25 per cent.) evidence of heredity was found. In four families there was a peculiar history and the pedigree of one for five generations was exhibited as an example. In this family nearly all the males were myopic and none of the females were affected; but the myopia was transmitted through the female line. It was in all the cases examined about the same—viz., 10-12 D., with some astigmatism. The fundus showed a crescent but grave complications were wanting. A peculiarity in this particular family was that all the healthy eyes were blue and all the myopic ones were brown. Night blindness was met with only in one family. The statistics of the 687 cases were as follows: of 313 with no family history of myopia 163 were males and 150 were females; of 374 with a family history of myopia 228 were males and 146 were females, showing that the usual preponderance of myopia in men was increased in such as had a myopic heredity. Of the 374 cases in which a family history of myopia was obtained in 159 the parents were not myopic, but the myopia was present in uncle, aunt, or grandparent. The fault was on the mother's side in 104, on the father's in 33, and on both sides in 22 cases.

Mr. J. HERBERT PARSONS and Mr. GEORGE COATS described with the aid of some excellent lantern slides a case of Orbital Meningo-encephalocele associated with Microphthalmia. The child had been exhibited at the society when 13 weeks old with large cyst-like masses in the right orbit which displaced the globe to the temporal side. The eye was small and showed ophthalmoscopically a coloboma of the nerve entrance and also of the macula. Various suggestions were made as to the orbital condition. As the deformity was very great and the swelling was increasing in size the contents of the orbit were removed but the child died a few days afterwards. The orbital mass consisted mainly of brain tissue which by the pressure exerted displaced and deformed the globe and was continuous through the fused sphenoidal fissure and optic foramen with an isolated smooth mass of brain substance within the skull beneath the frontal lobe and in front of the temporo-sphenoidal, both being displaced and somewhat flattened by pressure, but there was no connexion with either. It was therefore believed to be either a teratological inclusion or a portion of the brain snared off in early fœtal life possibly from the region of the caudate nucleus and growing independently. The eye showed three deformities, all of which were very rare: (1) An ectasia on the nasal side of the papilla having a lining of stretched choroid and normal retina; (2) a coloboma of the nerve entrance which was peculiar in being on the temporal side and entirely within the area of the porus opticus; and (3) a macular coloboma which consisted chiefly in a partial defect and depigmentation of the pigment epithelium, both choroid and retina being nearly intact. The relation between the encephalocele and the abnormalities of the globe was discussed.—Dr. J. S. RISIEN RUSSELL, Mr. C. DEVEREUX MARSHALL, and Mr. N. BISHOP HARMAN made some comments, the conclusion being that the condition was unique.

The PRESIDENT exhibited and described a Scotometer for the Diagnosis of Glaucoma and other purposes.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Patients.—Spasm of the Retinal Artery.—Vaccine Treatment in Surgery.—Occupation Mortalities.

A MEETING of this society was held on March 7th, Dr. J. O. AFFLECK, the President, being in the chair.

Dr. T. C. MACKENZIE showed a lad, aged 16 years, whose condition was suggestive of General Paralysis. His history was briefly as follows. He was born at full term and was the seventh child in a family of 11. At nine months he developed rickets and was five years old before he could walk. He had always been a dull child. At the age of eight years he began to suffer from pain on the left side of the head which passed off after a time. He had had several "fainting turns" in the street and at home. These were of the nature of congestive seizures; they left the lad dull for a long time afterwards and, moreover, affected his speech. For the last few weeks he had been behaving strangely, had lost his memory, and his mind had wandered. His mental condition was now dull and confused, though he had grandiose ideas. His muscular power was feeble and on walking he soon became exhausted. Romberg's sign was slightly developed. There was no history of specific disease.

Dr. EDWIN BRAMWELL exhibited: (1) Two Cases of Non-progressive Hemiplegia, in both of which an intracranial tumour was diagnosed as the probable lesion; and (2) a Case of Syringomyelia with Scapulo-humeral Arthropathy.

Dr. R. A. LUNDIE read a paper on a case of Transient Blindness due to Spasm of the Retinal Artery. He said that though such cases were probably not uncommon there were not many where the fundus oculi had been examined during the attack. He had met with records of several similar cases in which great contraction of the retinal artery, extending all over the fundus, had been observed. The only other case (with the exception of one described by Raynaud) in which localised transient spasm of the arteries occurred was described by Benson in 1894. In this case the patient suffered from transient loss of vision, sometimes of the whole eye, but more often of only part of the field of vision. The eye was examined on three occasions during an attack and on each occasion the portion of the retinal artery corresponding to the blind area was found to be empty but it soon refilled. Dr. Lundie's case occurred in a feeble man aged 88 years who suddenly lost the sight of his left eye. He was seen before the attack passed off, when the upper part of the field had regained some sight but not the lower. On ophthalmic examination it was found that the vessels were normal except the upper main branch of the retinal artery. In this there was an interruption of the column of blood in a section of the vessel slightly less in length than one diameter of the disc. In a few minutes a fine thread of blood appeared in this portion and within an hour of the onset vision was restored and the appearance of the artery became normal. The whole duration of the attack was under one hour. The only explanation of the case was that of localised spasm of the artery. No embolism or thrombosis could have passed away so completely in so short a time and the appearances were not those found in stasis. No doubt the spasm had affected either the trunk or all its branches at the onset of the attack. Spasm of three different types had been described. In most of the cases there was contraction of the whole retinal artery. In Benson's case the small empty portion passed along by a kind of peristaltic movement and refilled suddenly. In the last type the contraction affected a limited portion of the artery which remained stationary and refilled gradually as in Dr. Lundie's own case. The doubt thrown by such cases on the diagnosis of embolism of the retinal artery when sudden blindness occurred with contraction of that vessel was emphasised. If it were realised that spasm, not embolism, might be the cause of such attacks eyes that would otherwise be hopelessly damaged

might be saved. Another case was described occurring in a woman aged 22 years, otherwise healthy, who had numerous slight transient attacks of loss of sight. After one of these a sector-shaped defect of the field remained and the corresponding part of the fundus showed at the time œdema of the retina, and four years later great contraction of the branch of the retinal artery. The appearance observed at the time of the attack and the present condition of the fundus showed that the loss of sight was due to a lesion of the retinal artery. It was concluded that the attacks being transient had been due to spasm of the artery which persisted too long for the integrity of the part of the retina affected. Each attack was ushered in by vertical diplopia, "one side of things looking higher than the other," which was as transient as the blindness, always preceded it and even seemed to have occurred without being followed by loss of sight. This pointed to an associated spasm of the artery supplying some part of the extrinsic ocular muscles or their nervous connexions. The damage to vision which had occurred in this case was instructive and illustrated that these transient amblyopias of vascular origin, however trifling they might appear, were extremely likely to lead to permanent impairment of vision.—Dr. W. G. SYM, Dr. JAMES RITCHIE, Dr. D. M. C. CHURCH, and the PRESIDENT took part in the discussion which followed.

Dr. H. M. W. GRAY and Dr. G. M. DUNCAN (Aberdeen) communicated a paper on Vaccine Treatment in Surgery (which we hope to publish shortly).—In the discussion which followed Mr. H. J. STILES said that he had tried treatment by tuberculin at the Royal Hospital for Sick Children, Edinburgh, where there was a wealth of suitable material, and he was not so optimistic as Dr. Gray. In the very large number of tuberculous cases which had come under his observation he had had many surprises; cases thought to be incurable had recovered marvellously. He recalled one case of most advanced hip-joint disease which in his opinion was incurable and yet one year after this verdict the joint had healed perfectly. He thought that early cases of tuberculous disease should be treated by injections of tuberculin but he would hardly go so far as to say that splints were unnecessary. He believed that splints, dieting, and fresh air were most valuable aids. If too much faith were placed in the use of injections the result might be to cause so much delay that ultimately the operation might not be so satisfactory as it might have been if done earlier.—Dr. DAVID LAWSON (Nordrach-on-Dee) said that in his experience clinical symptoms were not sufficient to indicate the dosage of tuberculin. It required careful laboratory work to give correct information as to the dosage. His tendency in practice was now rather to diminish than to increase the dose.

Dr. J. C. DUNLOP read a paper on Occupation Mortalities. His remarks were based on a recent study of the occupation mortalities in Scotland, published in the Decennial Supplement to the Forty-eighth Detailed Annual Report of the Registrar-General for Scotland. He divided the occupations into six classes, according to whether the death-rates in the two more important age-periods (25 to 45 and 45 to 65) were greater, less, or not decidedly different from the corresponding death-rates of all males. Class 1 was characterised by low death-rates in both age-periods; in it were included ministers, clergymen, priests, farmers, graziers, agricultural labourers, and farm servants. Class 2 was characterised by a low death-rate in one age-period and a death-rate in the other age-period not decidedly different from that of all males. Class 3 was characterised by a death-rate in both age-periods not decidedly different from those of all males. In it were included physicians, surgeons, dentists, and maltsters. Class 4 was characterised by a high death-rate in one age-period and a low one in the other age-period. Class 5 was characterised by a high death-rate in one age period and one not decidedly different from that of all males in the other age-period. Class 6 was characterised by a high death-rate in both age-periods.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—A meeting of the Section of Pathology was held on Feb. 16th, Sir Thornley Stoker, President of the Academy, being in the chair.—The proceedings consisted of a discussion on Abdominal and Pelvic Tuberculosis.—Dr. James Little described the symptomatology and treatment of tuberculous disease as it affected the peritoneum, the intestines, and the mesenteric glands.—Sir William J. Smyly said that the study of tuberculosis of the female genitals during life had only been possible since the curette and abdominal section had come into vogue. The Fallopian tubes were the organs most frequently affected; the uterus was affected fairly often but other parts rarely. The possibility of infection through the spermatic fluid and also the infection of the fœtus by its mother were interesting questions. The difficulties attending diagnosis were so great that until the parts had been examined by the microscope it could rarely be attained with certainty. Neither the shape of the tumours or the thickening of the uterine end of the tube, to which so much importance had been attached by Hegar, nor the nodules on the folds of Douglas were peculiar to this disease. As regards treatment, the removal of the diseased organs was a difficult and dangerous operation which not infrequently left the unfortunate patients with incurable fistulæ.—Professor E. J. McWeeney, speaking with regard to the urine in cases of genito-urinary tubercle, said that he found tubercle bacilli without difficulty in about 90 per cent. of purulent urines with a distinctly acid reaction. The tubercle bacilli were usually agglutinated owing to the saline concentration of the urine and accompanied by polynuclear pus cells, owing, no doubt, to liberation of their proteins by osmosis or plasmolysis. Dealing next with the hypertrophic variety of tuberculosis of the ileo-colic region of the bowel he emphasised its resemblance to cancer and its manifold differences from the ordinary tuberculous ulceration met with in consumptives who swallowed their sputum. He suggested that it might be due to ingestion of bovine bacilli. Finally, he observed that the intestinal origin of pulmonary consumption suggested by Behring had been confirmed by Calmette of Lille and his pupils who found that pigment ingested by adult animals found its way at once to the lungs, whilst in young animals it was at first stopped in the mesenteric glands. Calmette had, moreover, succeeded in producing pulmonary tuberculosis, without lesion of the gastro-intestinal mucosa or of the mesenteric glands, by introducing a suspension of tubercle bacilli into the rumen of adult goats. These results, if confirmed, together with the disproof of Koch's assertion that bovine bacilli were innocuous for the human race should act as a warning against the dangers of infected ingesta.—Mr. T. E. Gordon read an account of a case of chronic abscess successfully treated by tuberculin. He also related the case of an old man for whom he had short-circuited a portion of the ileum with temporary success. Some months later the man returned to hospital with fresh obstruction and died. At the necropsy no less than five different tuberculous masses were found in different parts of the small intestine. It seemed clear that tuberculin treatment could never replace surgery in cases of this type.—Professor Arthur H. White dealt with Professor A. E. Wright's recent work and stated that the good effect of operations in certain cases of tuberculous peritonitis depended mainly on two factors—the first being the replacing of a fluid containing little or no protective substances by a fresh fluid containing a much larger amount, and the second being the rise in the opsonic index due to auto-inoculation which resulted from operation. He also demonstrated a fall in the opsonic index in four cases of tuberculous peritonitis which had relapsed, and in the only case which he had examined where the patient remained well the opsonic index was above normal.—Dr. Alfred R. Parsons, Dr. James B. Coleman, Dr. Richard D. Purefoy, the President of the Academy, and others also took part in the discussion.—A meeting of the Section of Surgery was held on Feb. 23rd, Mr. K. E. L. G. Gunn being in the chair.—Mr. D. Kennedy read a paper on Appendicitis. He strongly advocated operation in the course of the disease as being calculated to shorten the illness and to reduce the mortality. He gave a brief history of eight cases, out of a series of 43, upon which he had operated during the acute stage without a death. The dangers of operating during an acute attack, he believed, were greatly exaggerated. Unless complications were present appendicectomy was as safe during the attack as in the quiescent period. The ideal operation was removal of the offending structure. If pus were present free drainage should be provided. Mr. Kennedy condemned indiscriminate douching and rough sponging of the peritoneum. The diagnosis of the disease was frequently difficult in children and a proper examination could only be made in these cases by the aid of an anæsthetic. In all cases he recommended a rectal examination and in females a vaginal examination when possible for diagnostic purposes.—

Mr. Gunn referred to the importance of a leucocyte count in coming to a diagnosis and recommended the employment of palliative measures before urging operation.—Mr. A. B. Mitchell alluded to the difficulty sometimes experienced in diagnosing appendicitis in an early stage. He had seen the condition confounded with perforation of a duodenal ulcer. He thought it was advisable to remove the appendix in suppurative cases, and also at a very early period if the disease was diagnosed with certainty. Failure to remove the appendix might lead to recurrence with abscess formation.—Dr. M. B. Savage mentioned some facts illustrating the connexion between appendicitis and suppuration elsewhere in the body. In one case he thought that an attack of appendicitis had followed upon follicular tonsillitis ending in suppuration.—Mr. Mitchell read a paper on Excision of the Scapula for Neoplasm. The patient was exhibited and demonstrated the range of movement and the functional capacity of the limb.—The communication was discussed by Sir Thomas Myles, Mr. Kennedy, Dr. H. M. Johnston, and Mr. H. B. Goulding.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on March 9th, Sir Shirley F. Murphy, the President, being in the chair.—Dr. Philip Boobbyer (Nottingham) read a paper on Some Defects in the Machinery of Sanitary Administration. Beginning with the Local Government Board he urged that the absence of any medical member was a defect, and pointed out that an expert member of a board could press his views with a weight that no official, however eminent, could, his function being merely to advise; and he ridiculed the notion that an expert, whether a military, naval, or medical officer, would be more inclined to faddism or extreme measures than a layman, while the latter would be more likely to make costly mistakes. He paid a high compliment to the expert medical inspectors of the Local Government Board but maintained that a larger proportion ought to be selected from among medical officers of health who would bring a knowledge of practical administrative work. He suggested the coöption on to rural sanitary authorities, on which there were frequently no men possessing any experience or qualifications for the control of the public health, of one or more medical officers of health of neighbouring districts—a practice which had been found to work well in the case of the education authorities who often coöpted educational experts. He deprecated half-time appointments in the interest alike of the medical officers and of the districts which they served; they were hampered by their practice and the sanitary administration tended to devolve entirely on the inspectors who, even if competent in their own duties, had no conception of public health beyond the details of house sanitation. Indeed, the public believed in the invariable connexion of diphtheria and typhoid fever with bad drains. He pleaded for the better education of inspectors, not only theoretical but practical, by a system of assistants or apprenticeship, while he thought that the post of chief inspector in large towns might with advantage be held by a D.P.H. aspiring to the position of a medical officer of health. He claimed for the medical officer of health the same control and absolute responsibility for all that related to the public health as were accorded the engineer in his department. The medical officer, although a man of science, should be also a man of business and an administrator, not a mere figure-head or even a consultant only. Turning to public health legislation, Dr. Boobbyer pointed to a few instances, typical of many more, of clauses in Public Health Acts which were so absurd or unworkable that they were evidently drafted by persons wholly ignorant of the matter in question. Why should not our municipalities have the like power with those of Germany not only for improving the actual housing conditions but of large acquisitions of land and a control of the lines of development of the city for many years to come which had worked so admirably in, e.g., Düsseldorf and Ulm?—Dr. W. Butler (Willesden) would go farther than Dr. Boobbyer in his demand for the independence and authority of the medical officer of health which should extend over the whole field of State medicine. Vaccination was an important branch of preventive medicine, but had passed into the hands of the guardians along with Poor-law medical relief. The supervision of the health conditions of schools and the registration of births and deaths were in lay hands, though distinctly in the province of the medical officer of health, whose subordinates the registrars should be, that he might have the earliest information. Quite recently he found when too late that two deaths certified as rickets were some of an outbreak of ptomaine poisoning from sausages.—Dr. A. Newsholme (Brighton) maintained that the influence exerted by a medical officer of health depended on himself and doubted if sanitary efficiency would be attained by making him an autocrat. Nor would anything be gained by changing the name of President of the Local Government Board into that of Minister of Health. An expert was not always a good administrator and a lay head relied on the advice and judgment of an expert subordinate. In all Government offices it was the permanent officials who controlled and gave continuity to the administration.—Dr. H. Meredith Richards (Croydon) by employing as workmen aspirants for the inspectorate provided a form of apprenticeship. He urged more combination of rural districts, mentioning cases of adjoining areas which together might have carried out water or sewerage schemes but where through local and topographical conditions neither could do so alone.—Dr. J. S. Tew, Dr. E. F. Willoughby, Dr. J. W. Hembrough, Mr. Herbert Jones, and the President having spoken, Dr. Boobbyer replied.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 7th, Mr. T. J. Dabell, the President, being in the chair.—On the motion of Mr. W. Tibbles, seconded by Mr. W. Morley Willis, it was decided to call a special meeting to consider the indiscriminate mode of distributing letters of recommendation to the General Hospital and other medical charities and whether a remedy could be suggested to check the growing abuse of these charities.—Mr. Willis showed a girl, aged four and a half years, from whom he had a month previously removed the right kidney for sarcoma, the tumour being as big as a child's head at birth. Hæmaturia occurred once before admission and a few pus cells were found in the urine. The temperature ranged from 99° to 100° F. The swelling was not particularly tender and when the kidney was exposed by an abdominal incision its consistency was soft enough to give typical fluctuation. The absence of tenderness made an inflammatory affection improbable and the dilated veins seen on the surface of the tumour when exposed were suggestive of the true nature of the case.—Dr. Reed showed a child, aged 14 months, the subject of Infantile Scurvy. There had been bleeding from the gums and the lower limbs were held in a stiff, awkward position, apparently pointing to hæmorrhage into each hip-joint. With the exception of a short period of some patent food, the child had been fed since birth on milk which had been boiled for five minutes and not on anything else. Fresh milk and lemon juice set up a striking improvement and the excruciating pain was greatly bettered within 12 hours of the commencement of treatment.—Dr. W. B. Ransom and Dr. F. H. Jacob discussed this case.—Dr. Jacob showed a child (the subject of a previous communication) in whom a Nævus had been successfully cured by Radium.—Dr. Ransom read a paper on Infantilism or persistence of childish characteristics. After a survey of the many causes held to be contributory to such a condition, such as cretinism, congenital syphilis, hydrocephalus, congenital heart disease, tuberculosis, mongolianism, imperfect sexual development, pancreatic deficiency, muscular dystrophy, Raynaud's disease, achondroplasia and normal infantilism, the classification adopted by Mr. Hastings Gilford of Reading was traced out and the characteristics of each class were pointed out and illustrated. Examples of the conditions named ateleiosis and progeria were also shown. Of special interest was the case of a female, aged 27 years, who died recently from diabetic coma in the Nottingham General Hospital ten days after admission. She was 4 feet 3 inches in height but only weighed 3 stones 8 pounds. She was backward when at school and was said to have suffered from headaches and chronic diarrhœa. There was no history of syphilis or alcoholism and she had never menstruated. The abdomen was prominent, the gluteal muscles were undeveloped, the pelvis and thighs approximating to the male type, and latterly the bowels were constipated; the fæces were not fatty. Patches of atheroma were found in the aorta, while the pancreas, the spleen, and the mesenteric gland showed a slight degree of senile cirrhosis. The thyroid body was normal, the thymus was absent, and the pituitary body was normal. The pancreas was thin

and tapelike, weighing less than one ounce. The suprarenals showed some cell-vacuolation as of fatty degeneration. The uterus was so little developed that its cavity would only admit a pin and no ovaries or testes could be found. No cause of the condition of infantilism or ateleiosis was discovered, unless the absence of the sexual glands could be considered such.—Dr. Jacob showed photographs of cretins before and after treatment with thyroid substance and pointed out the extraordinary improvement which might follow such treatment, both in intelligence and physical stature.—Dr. Ransom showed specimens of Malignant Adenoma of the Suprarenal Capsule (hypernephroma of Ziegler) and read notes of the case. The patient was a man, aged 68 years, and the most prominent symptom was intermittent hæmaturia. A large swelling could be felt in the region of the left kidney, and after the bladder had been opened and washed free of clots this was removed by Mr. Anderson. Microscopically the tumour showed marked vacuolation of the glandular cells, as though loaded with fat, and it invaded both the renal structure and the surrounding fat.

MIDLAND MEDICAL SOCIETY.—A meeting of this society was held at Birmingham on Feb. 28th, Mr. J. Quirke, the President, being in the chair.—Mr. C. A. Leedham-Green showed a young girl for whom, by means of an Extensive Plastic Operation, he had been able to conserve a useful arm after it had sustained a compound comminuted fracture of the elbow-joint and thereby lost a zone of skin some six inches in width.—Dr. James Sawyer showed a specimen of Cicatricial Contraction of the Stomach taken from a man, aged 44 years. The œsophagus was normal except for a slight dilatation with ulceration at the lower end. The stomach was two and a half inches in length, with a lumen at no part more than a quarter of an inch in diameter and with walls about half an inch in thickness. The duodenum below was dilated and an opening had been made into it by operation in order to relieve the starvation from which the man was dying. For the last five years the patient had suffered from pain and vomiting after taking food and seven weeks before death he attempted to commit suicide by taking soldering fluid. The taking of this corrosive fluid did not seem to have affected him much as he was only slightly collapsed and had very little vomiting at the time. He went out of hospital, able to swallow solid food, 16 days after taking the poison. It was thought that the condition could not be entirely due to the cicatricial contraction of the stomach as a result of the poison, but that there must have been either a congenital deficiency of the stomach or a contraction from some cause not ascertained and that the poison was sufficient to cause further diminution in the lumen of the stomach. Microscopically there was no mucous membrane present and the stomach was composed of cicatricial tissue. There was nothing to suggest that the condition was that of a scirrhous carcinoma.—Dr. Charles E. Purslow showed a Dermoid Cyst of the Ovary containing hair, teeth, and bone. It was removed from a patient who was in the last week of her second pregnancy and had complained of abdominal pain, vomiting, and trouble with micturition for three months. A tumour of the size of a fœtal head was found impacted in the pelvis. Cæsarean section was performed and a living child was extracted, then the tumour was removed, and lastly the uterine and abdominal wounds were sutured. The child was weakly and died the same day. The mother made an uninterrupted recovery. In opening the uterus Dr. Purslow first made a small incision down to the membranes and then inserted both forefingers and tore the wound to the required extent. This saved time and lessened hæmorrhage. The resulting wound presented no difficulty in suturing.—Mr. George Heaton showed two specimens of Goitre removed under Local Anæsthesia. The method adopted in each case was that advocated by Mr. A. E. J. Barker. The solution was injected into the operation area and towards the anterior divisions of the cervical nerves. The anæsthesia was complete in half an hour and lasted for another hour. The first specimen was the right lobe and isthmus of a parenchymatous goitre which had been in existence for 14 years and lately had caused much dyspnœa, which was associated with paralysis of the right vocal cord. The operation lasted 27 minutes and the patient made a good recovery. The second specimen was a similar one from a patient 42 years of age. There was much narrowing of the trachea, but the operation and result were as satisfactory as in the first case.—Mr. A. J. Fairlie-Clarke demonstrated Mr. Barker's apparatus and explained its use.—Mr. J. Jameson Evans showed a boy, aged seven years, who suffered from Hereditary Nystagmus. The vertical movements of the eyes were defective and the choroidal pigment was deficient. The hair, although rather light, was not albinotic but was said to have been formerly lighter in colour. His grandfather and all the male members of the two succeeding generations suffered in the same way but none of the female members.—Dr. J. G. Emanuel showed two cases of Multiple Exostoses occurring in a Brother and Sister.

BRITISH GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on March 8th, Mr. F. Bowreman Jessett, the President, being in the chair.—Dr. J. H. Jellett showed a specimen of Advanced Carcinoma of Both Ovaries removed from a patient, aged 40 years, who complained of paroxysmal attacks of pain, associated with a swelling in the abdomen which had been gradually increasing for the previous eight months. The patient had been married four years; the periods had been regular, lasting four days, but were accompanied with pain. The lower abdomen and pelvis were occupied by a hard, irregular mass which was densely adherent below. On making an exploratory incision the tumour was found to consist of two separate parts, with the uterus between. The lateral tumours occupied the site of the ovaries and appeared like cysts. There was an abscess closely connected with the uterus and the broad ligaments were extensively infiltrated as well as the rectum. The uterus and tumours were removed and the pelvis was drained through the vagina with iodoform gauze. Four months later the patient returned with three small abscesses along the line of the abdominal incision. The rectum was surrounded by a hard mass. The patient had increased in weight and appeared to be well. The solid growth consisted of carcinoma of irregular-cell type.—Dr. Jellett also showed a specimen of Double Pyosalpinx with an extra-uterine fœtus of four months pregnancy removed from a patient, aged 27 years, who complained of bleeding during coitus and pain in the lower part of the abdomen. There were no children but the patient had a miscarriage at about the twentieth week, 18 months previously. On opening the abdomen the omentum was found to be thickened and adherent to the Fallopian tubes. The right tube was enlarged to the size of a sausage, firmly adherent to the ovary, and distended with pus. The skeleton of a four months fœtus projected from the ampulla on the same side. The left tube was of the size of a finger and contained pus, while the ovary was cystic. Both tubes and ovaries were removed. The uterus was fixed to the anterior abdominal wall after Kelly's method.—Dr. M. A. D. Scharlieb showed an Enlarged Uterus removed from a patient, aged 50 years, who complained of weakness, vaginal discharge, frequency of micturition with scalding, and constipation. There were nine children, the youngest 16 years of age. The periods were regular until 11 months previously. A large, irregular, hard tumour was found in the abdomen. The cervix was irregular and a papillomatous mass protruded through the os uteri. The uterus and appendages were removed at the operation, the latter being healthy, while the former was enlarged to the size of a four months pregnancy. The uterine cavity was occupied by a growth mainly attached to the anterior wall. On microscopical examination this proved to be an endothelioma and in portions presented the appearances of perithelioma.—Dr. Jellett read notes of Two Rare Conditions met with in the Pelvis during Operation. During the course of salpingectomy the sigmoid flexure was found to be deviated to the right, while from the lower border a tubular structure about three inches long and half an inch wide passed into the recto-uterine pouch, where it was adherent. The second condition was found during the removal of a cystic ovary from a patient who had been tapped several times for ascites. On examining the left side of the pelvis adhesions were found between the uterus and intestines; on separating these for the purpose of examining the appendages the left ovary was absent and the Fallopian tube represented by a stump about half an inch in length with a correspondingly diminished broad ligament. There was no history of any previous pelvic operation.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting of this society was held on March 8th, Dr. J. Hill Abram, Vice-President, being in the chair.—After the exhibition of card specimens Dr. T. R. Bradshaw read a note

on the Recognition of Myelopathic Albumose in the Urine and demonstrated the chief clinical tests. He laid special stress on the determination of the coagulation point and on the hydrochloric acid test, pointing out the uselessness of many of the tests frequently employed, such as the biuret reaction and Boston's test with lead acetate.—Dr. Ernest E. Glynn described the site of hæmorrhage in 12 cases of fatal Hæmatemesis. In seven the bleeding came from the œsophagus, four being secondary to hepatic cirrhosis. In three the hæmorrhage originated in the stomach, two from ordinary gastric ulcers, and one from three minute gastric erosions. In two instances no lesion whatever was discovered in the stomach, œsophagus, or intestines, though the organs were removed a few hours after death and most carefully examined. He suggested that the hæmorrhage might have arisen from the posterior naso-pharynx. A fatal case of Acute Hæmorrhagic Cystitis was also described, the blood forcing its way into the pelves of both kidneys.—Dr. K. A. Grossmann read a paper on Congenital Anophthalmos and Orbital Cyst. Of five cases of congenital anophthalmos seen by him three had been shown before the society, one with monolateral and the other two with double anophthalmos. In four patients altogether an orbital cyst was present monolaterally. The eyelids were well formed in all the cases, though the palpebral fissure was small; the conjunctiva formed a small and shallow funnel corresponding to an equally small orbit in which no trace of an eyeball could be seen or felt. In the three cases demonstrated the tumour of the lower lid was of the size of a pigeon's egg, was blue in colour, and was cystic to the touch. In two of these cases the cyst had been removed and examined. These cysts owed their origin to the arrest of the closure of the fœtal fissure of the optic vesicle; the portion of the mesoderm which pushed into the secondary eye vesicle to form the vitreous did not stop growing at the normal time and not only prevented the closure of the fissure but often also produced a cystic extension which had for its walls the layers of the embryonic eye vesicle. The cyst might grow large while the eyeball itself might remain smaller than normal, might be so small as to be overlooked completely, or might disappear altogether. In the one specimen a rudimentary eyeball about two millimetres in diameter was discovered, a regular "kryptophthalmos," and in the other no trace of an eye could be found at all. In the former case the cyst was lined with a layer which appeared to be derived from the outer layer of the embryonic eye vesicle—i.e., the pigment epithelium; in the other specimen the lining of the cyst reminded him very strongly of the inner layer of the optic vesicle which formed the retina proper. The paper was illustrated by slides and micro-photographs.—Mr. Hugh E. Jones and Mr. E. M. Stockdale showed an Angeioma of the Pinna removed from a boy, aged 16 years. Several attacks of severe hæmorrhage had occurred and some of the vessels entering the growth had previously been tied without effect. Microscopically the specimen showed the characteristics of tumours described as plexiform angeioma, nævi, cylindroma, and endothelioma or hæmangio-sarcoma. The whole auricle was removed.

ULSTER MEDICAL SOCIETY.—A meeting of this society was held in the Medical Institute, Belfast, on March 1st, Dr. J. R. Davison, Vice-President, being in the chair.—Dr. J. S. Darling showed a patient from whom the Inferior Maxilla was removed for a sarcoma involving that bone.—Dr. V. G. L. Fielden read a note on the Solar Reflex occurring in abdominal operations.—Dr. Thomas Houston and Dr. J. C. Rankin communicated a paper on the Method and Results of giving Therapeutic Inoculations in Staphylococcic and Tuberculous Lesions. In it they gave an account of the results of the treatment of a large number of cases presenting staphylococcic and tuberculous lesions. The inoculations were controlled as far as possible by determinations of the opsonic index according to the principles laid down by Professor A. E. Wright and his pupils. Lantern pictures showing tables of the opsonic indices in each case before treatment was begun and opsonic curves worked out from cases under treatment were exhibited. The experiments which they had made with reference to the nature of the opsonin supported the view of Wright, Douglas, and Bulloch—namely, that the opsonin differed in nature from the "immune body" or a combination of "immune body and complements." In some 25 cases of staphylococcic lesions they found the opsonic index below unity. It seemed evident that the persistence of the lesion was the result of this low opsonic power in such cases. In some cases at least the origin of this low opsonic index was connected with the lesion, while in other cases the low opsonic power might be due to congenital deficiency in this respect. Their results showed that this low opsonic index could always be raised by appropriate inoculations and that in many cases a series of inoculations produced a permanent recovery. The results of treatment in the cases of furunculosis were exceedingly good, as the majority of their patients had entirely recovered from their infection. The cases of acne were more prone to relapse, though as a rule the condition had been very greatly improved. With regard to the tuberculous cases which they had treated by this method they were of opinion that a year's work was hardly long enough to arrive at a definite opinion of the value of the method. Practically all the tuberculous cases had shown great improvement in weight and general condition after beginning the inoculations. Three cases of tuberculous peritonitis seemed to have recovered perfectly and the patients were now in robust health. The patients suffering from bladder and kidney trouble had been greatly benefited by the treatment, although none of them could as yet be said to be entirely free from disease. Several cases of tuberculous adenitis had been greatly improved in general condition and the glands had decreased in size. The only case of pulmonary tuberculosis that had been treated had improved remarkably. Many of the tuberculous patients were still undergoing treatment.—The discussion on the paper was adjourned until the next meeting.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A pathological meeting of this society was held on March 2nd, Mr. E. Ward being in the chair.—Dr. J. K. Jamieson and Mr. J. F. Dobson showed a number of specimens, injected by Gerota's method, illustrating the Anatomy of Various Groups of Lymphatic Glands with their Afferent and Efferent Vessels.—Dr. A. S. F. Grünbaum made a communication on Some of the Pseudo-parasites of Cancer. He said that they might be classified as (1) cell degenerations; (2) cell inclusions; (3) non-specific parasites; and (4) "Plimmer's bodies." Cell inclusions had become more interesting since Moore and Walker, by their discovery of dividing cancer cells containing dividing leucocytes, had brought additional light to Klebs's old hypothesis of the origin of cancer by the fusion of leucocyte and epithelial cell. The appearances classed as Plimmer's bodies were of various origin. The term should be reserved for the structure corresponding, as Moore and Walker had also shown, to the vesicle in the spermatid. Since such vesicle-containing cells often became included in other cells, enlarged and then divided, they seemed to play a part analogous to that of the spermatozoon. The extraordinary size of some cancer cells was thus explained and they were much more frequent in tumours showing clinically also rapid growth. The irregular mitosis indicated that their multiplication did not follow, and probably was not governed by, ordinary rules.—Dr. O. C. Gruner read a paper entitled Cryoscopy, its Practical Use in Medicine and Surgery. After discussing the principles on which the method depended an account was given of the results obtained by examining blood. It was shown that as a rule in renal disease the osmotic concentration of the blood increased; the exceptions to this were occasionally due to the association of serous effusions, whereby the salts were retained. In reviewing the results obtained by examination of the urine it was specially recommended that the cryoscopic findings should be compared, not with what was supposed to be normal, but with what was found to be usual for the particular patient. The "water" test and the "salt" test were described. Reference was next made to the examination of segregated urine to detect unilateral disease of the kidney. An illustrative case was given to show that cryoscopy was of decided use here. Tables of results of the examination of numerous specimens of urine, blood, and other body fluids were shown. A chart giving the osmotic variation occurring during the course of a case of pneumonia was also referred to.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 2nd, Mr. L. A. Bidwell being in the chair.—Dr. J. A. Coutts read a paper entitled "Some Points in Infantile Scurvy." In it he described some cases recently under his care, in one of which extensive hæmorrhage occurred under the periosteum of the femur, the lower epiphysis of the same bone being separated. Although the usual treatment of such cases—namely, milk feeding and the administration of lemon juice—

was adopted the case did not rapidly clear up in the usual way and new bone was deposited under the periosteum which had been raised off the shaft of the bone, so that egg-shell crackling was clearly to be felt. An incision was then made into the swelling and some of the clot turned out, but the child did not recover. A similar case was then described in which no operation was done. It was subsequently found that the reason why the cases had not improved in the usual way was that the dairy company which supplied the institution in which the infants were under treatment had, unknown to the authorities, been supplying Pasteurised milk instead of ordinary cows' milk; when this was rectified the second child recovered. The paper was illustrated by the specimen obtained from the first case and skiagrams showing deposit of new bone under the periosteum in the second.—A discussion followed in which the President, Dr. Arthur Saunders, Mr. Walter E. Fry, Dr. Boyd B. Joll, and Dr. Muir took part.—Dr. E. Furniss Potter read a paper entitled "Reflections on the Treatment of Chronic Otorrhœa." He detailed the measures that were advised for the routine treatment of a chronic aural discharge by means of injections, drops, and the like, and pointed out that the time necessary and the frequent visits which would be required to the medical adviser made it impossible in a very large number of cases for this form of treatment to be carried out efficiently. He had therefore come to think that the much more frequent adoption of the radical mastoid or complete post-aural operation would be a great benefit to those who were the subjects of a discharging ear. This procedure was safe and in properly chosen cases offered an almost certain prospect of stopping the discharge in a reasonable time.—A discussion followed, in the course of which Mr. Richard Lake showed a number of lantern pictures illustrating the complete mastoid operation.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 2nd, Dr. J. Galbraith Connal being in the chair.—Dr. W. S. Syme showed a case in which Paraffin had been Injected into the Cavities after the Double Mastoid Operation. This shortened the treatment and obviated any unsightly depression. He also showed a case in which the Radical Mastoid Operation was performed for urgent symptoms. The lateral sinus was extensively exposed and appeared to be converted into a firm cord.—Dr. J. Stoddart Barr showed: 1. A boy operated on for Extradural Suppuration at the Lateral Sinus consequent upon middle-ear disease. The symptoms were headache, shiverings, vomiting, and squinting of the right eye. Dr. J. Rowan examined the eyes and reported paralysis of the right external rectus and marked double optic neuritis but no hæmorrhages. After the operation the paralysis of the sixth nerve slowly passed off. The optic neuritis, however, increased and hæmorrhages appeared after four weeks. It then began to subside. The urine contained no sugar or albumin. 2. A man who had been operated on for Lipoma Nasi. The hypertrophied parts of the nose were removed in slices and the nose was remodeled. The raw surface was completely covered with epithelium in six weeks.—Dr. W. B. Inglis Pollock reported a case in which he had removed a small Dermoid from a boy's eye. Two-thirds of its circumference were occupied by granulation tissue containing a large number of giant cells and imbedded hairs.—Dr. W. J. Richard showed two specimens of Rupture of the Aorta.—Dr. James Scott showed a Heart with a Minute Aneurysm in the left sinus of Valsalva of the pulmonary artery and with a small tumour, closely resembling a papilloma such as is often seen in the vocal cord, attached by a pedicle to the posterior valve of the same artery.—Dr. Hugh McLaren showed a large Ovary infiltrated with lime salts. He also showed a large Gastric Ulcer which had penetrated the stomach wall but extension to the peritoneum had been prevented by adhesion to a mass of adipose tissue.

MANCHESTER MEDICAL SOCIETY.—At a meeting of this society held on March 7th Dr. Arnold W. W. Lea made a communication on Vaginal Drainage in Children, in which he pointed out that collections of fluid or pus in the pelvis could be more efficiently evacuated and drained by this route. He referred to ten cases in which he had adopted this method in children of from five to 14 years of age and stated that an indiarubber or glass vaginal drainage-tube was very well borne by even young children.—Dr. J. J. Cox exhibited a boy, aged 12 years, with Rheumatoid Arthritis of four years' duration. In addition to much general muscular atrophy there was considerable contracture of the hands and of the upper and lower limbs, with limited movement in the cervical portion of the spinal column but no interference with the movement of the lower jaw. Skiagrams showed little local change in any of the joints with the exception of the two shoulder-joints. Dr. Cox suggested that "myelopathic arthritis with muscular atrophy" would be a better and more descriptive name for such an affection than "rheumatoid arthritis."—Mr. M. J. Chevers read a paper on Branchial Fistula and its Treatment. After discussing the pathology of the condition he mentioned a case occurring in a young woman which he had treated by the application of croton oil to the lining membrane of the fistula. He immediately followed the treatment by the regular use of the galvanic current locally, at first to the fistula internally and subsequently externally. Healing occurred and the cure was apparently complete 12 months later.—Dr. N. C Haring made a communication on Operations for Deflection of the Nasal System.

OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.—A meeting of this society was held on March 5th, Mr. A. E. Cumberbatch, the President, being in the chair.—The meeting was devoted almost entirely to cases of Intracranial Complications of Middle-ear Suppuration.—Mr. Hugh Jones reported a case in which there was septic thrombosis of the lateral and sigmoid sinuses and internal jugular vein down to the level of the omohyoid muscle. The vein was tied in the lower part of the neck, the sinus was plugged, and the vein was washed out. Seven days afterwards an acute temporo-sphenoidal abscess was evacuated and 17 days later, owing to suppuration of the clot in the lateral sinus, the latter was exposed and obliterated as far as the torcular Herophili. The patient recovered.—Dr. J. Dundas Grant said that he doubted the propriety in these cases of washing out the vein, but Mr. Jones, in his reply, expressed the opinion that there was more danger in leaving septic material in contact with the already thrombosed small branches.—Dr. J. Stoddart Barr reported a case in which purulent right middle-ear disease of 16 months' duration was followed by headache, diplopia, paralysis of the external rectus, and double optic neuritis. A radical mastoid operation succeeded in clearing out cholesteatomatous masses and pus was found in the lateral sinus groove. The patient made a good recovery; the paralysis of the sixth nerve gradually passed off, but the optic neuritis persisted for three months.—Mr. Cheatle pointed out that paralysis of the sixth nerve was always recovered from and was due to pachymeningitis of the posterior cranial fossa.

HARVEIAN SOCIETY.—A clinical meeting of this society was held on March 8th at the Hospital for Epilepsy and Paralysis, Maida Vale.—Dr. Leonard G. Guthrie showed a case of Congenital Ataxy in a boy, aged five and a half years. There were incoördination and intention tremor of the upper extremities and the gait was unsteady. The knee-jerks were exaggerated. Instruments had been used at birth. He attributed the condition to cerebellar meningeal hæmorrhage. He also showed two cases of Infantile Paralysis.—Dr. H. Campbell Thomson showed a case of Paralysis Agitans with a peculiar gait which he termed intermittent claudication.—Dr. J. F. H Broadbent considered the condition to be functional.—Dr. Guthrie also held that the gait was functional.—Mr. Barker (for Dr. Ogilvie) showed a case of Tabes Dorsalis in which great improvement in coördination had resulted from physical exercises.—Mr. M. S. Mayou showed a case of Double Congenital Ptosis in a child and also a case of Paralysis Agitans in which rigidity without tremor was present.—Dr. Barker (for Dr. Wilfred Harris) showed a case of Spasmodic Torticollis in a man, aged 41 years, in which improvement had resulted from excision of a portion of the spinal accessory nerve but the spasm was not completely arrested.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 1st, Dr. A. Newsholme, the President, being in the chair.—Dr. D. G. Hall showed three cases of Raynaud's Disease, in one of which there was dry gangrene of the left hand and wrist.—Dr. W. C. Chaffey showed a baby with symptoms of Raynaud's disease.—Mr. J. A. Rooth showed a Thymus Gland four inches long taken from a child 18 months old who had died suddenly, in whom no other cause of death was found.—Mr. G. Morgan showed a large Sarcoma of the Lung.—

Mr. V. T. Greenyer showed microscopic slides of the blood of a case of Æstivo-Autumnal Fever. Many crescents and intracorpuscular parasites were visible. He read notes of the case and also of one of Paroxysmal Hæmatinuria in which large numbers of bacilli had been seen in the urine.—Dr. C. H Benham read a paper on the Bacteriology of the Common Cold. He had examined 20 cases and had found various organisms, including the micrococcus catarrhalis, but his most frequent finding had been the bacillus segmentosus coryzæ described by Cautley, and of this he showed cultures and microscopic specimens.

Reviews and Notices of Books

A Text-book of Materia Medica for Students of Medicine. By C. R. MARSHALL, M.D. Vict., Professor of Materia Medica and Therapeutics in the University of St. Andrews. London: J. and A. Churchill. 1905. Pp. 635. Price 10*s.* 6*d.* net.

A NEW text book of materia medica has to justify its existence by the presentation of some new features. The ground is already so well covered that it is difficult to make room for a new competitor for favour. In this book Professor Marshall has certainly introduced some novel features, and he has gained much space by limiting consideration to official substances and their compounds. He states that the object of this book is to serve as a guide to the British Pharmacopœia and as an introduction to pharmacology and therapeutics.

The essential novelty in this text-book is the importance given to chemical constitution; thus after dealing with the inorganic substances and the synthetic organic substances the author groups the animal and vegetable substances employed in medicine according to the composition of the leading active constituent. To a certain extent such classification possesses obvious advantages, since it enables many drugs which have similar actions to be placed consecutively; but, on the other hand, there are certain inconveniences attaching to the plan, since space has to be found for all official drugs and some must be placed in honourable positions to which they have a very slender claim. Thus at the end of the section dealing with drugs containing alkaloids as the main active constituents, a section including the belladonna group, coca, nux vomica, opium, and similar important drugs, we find serpentary root, which "is believed to contain an alkaloid, aristolochine," and though it is stated that no alkaloid has been obtained from the drug, yet "it is convenient to describe it here." In spite of the imperfection of this classification, of which the author is himself conscious, it must be admitted that it possesses distinct advantages over many of the older systems of botanical classification by the natural orders or of arranging together the various roots, woods, barks, and seeds, as though the part employed afforded any useful indications of the action or in any way facilitated the work of the student.

The best intentions are, however, liable to be upset by circumstances and Professor Marshall illustrates the inherent difficulties of classification by introducing a section on "laxative fruits"; although he has little to say regarding the four which are merely used in making confection of senna, he appears to feel some regret that the official mantle has not been cast upon raisins, since they enter into the composition of two preparations. Without defending the inclusion of figs and prunes, tamarinds and cassia pulp, we may suggest that in the pharmacopœia raisins, where mentioned, are distinctly referred to as those "of commerce," and they seem hardly to require more attention either from their importance or from any possibility of adulteration or impurity. The chemical classification has much in its favour; a student of organic chemistry who carefully considers the information here given regarding the constitution of the alkaloids, for example, will probably have more kindly feelings towards a subject which has perhaps previously perplexed and repelled him and he will certainly be in a better position to appreciate pharmacological actions. It is to be hoped that students will bear in mind the prefatory note which conveys the warning that chemical formulæ where given are not intended to be learnt, since materia medica is already overburdened with figures relating to doses and the amount of active constituents. In the prefatory note above mentioned we think the reference to solubilities is rather unfortunate. A general idea is no doubt an advantage but few examiners would be sufficiently cruel to demand more.

This text-book does not deal in any detail with experimental pharmacology, though results which are of practical importance are mentioned. The description of the actions and uses frequently appears somewhat meagre and leaves much to be learnt by practical experience. For example, the frequent hypodermic employment of strychnine in cases of heart failure would scarcely be inferred from the statement that it is used in heart disease when digitalis is contraindicated. On the other hand, students should be grateful for the 30 pages in which the author has contrived to include much that is useful relating to the Pharmacopœial preparations; in these pages the author goes far towards realising the conception of a guide to the Pharmacopœia, while in the later pages the directions are often whittled down until they become almost unintelligible, as in the directions for the preparation of liquor thyroidei. Many of the older books on materia medica were illustrated with pictures of medicinal plants, in which the whole plant was commonly depicted almost regardless of the special part employed in medicine. The illustrations in this book are intended to portray all those drugs which possess distinctive characters. While admitting the difficulties inseparable from such illustrations and the successful results sometimes obtained there are certain blocks which leave much to be desired, especially those depicting some of the woods and barks.

This text-book presents numerous features which should render it acceptable to students who will find their labours facilitated by a judicious employment of different type for important and unimportant statements, and if it scarcely affords adequate help in prescribing this is a matter that is, perhaps, better studied in actual practice or in a book on treatment than in the pages of a book devoted to materia medica.

Allgemeine Pathologisch-Anatomische Diagnostik. (General Diagnosis in Pathological Anatomy.) By Dr. R. OESTREICH, Privat-docent in the University and Prosector at the Queen Augusta Hospital, Berlin. Berlin: S. Karger. 1905. Pp. 323. Price 6 marks.

Dr. Oestreich in his preface tells us that this book has been prepared on the basis of his practical course of pathological anatomy and that since seeing and feeling are the essential channels of information in regard to the characters of diseased organs his object is to show how the diagnosis of the cause of death can be evolved from the information obtainable by sight and touch. The result we may premise at once is a text-book admirably adapted to the needs of the student and one which should form a very useful manual for the post-mortem room and pathological laboratory. The descriptions of technique and the consideration of theories are for the most part rigidly excluded and the work deals with the method of observing morbid organs and with the conclusions to be drawn from the conditions found. Dr. Oestreich's method is one which we can cordially commend, for it inculcates the importance of an orderly and systematic investigation in every case. The work is divided into two parts, the first dealing with the macroscopical features and the second with the microscopical appearances of morbid tissues and organs.

Part I. begins with a consideration of the genera

method, including the estimation of size and form, the determination of consistence, the appearances of the surfaces and the sections of the various organs, and then proceeds to the investigation of the contents of the hollow viscera. A well written section follows dealing with the signs of death considered from the standpoint of the pathologist and this in turn is succeeded by a consideration of the cause and manner of death. Various pathological processes and conditions are then separately considered and the changes produced by them are clearly and succinctly described—among them the degenerations, hypertrophy, atrophy, local death, tuberculosis, syphilis, ulcers, and tumours. Part I. concludes with a separate discussion of the diagnosis of pathological conditions of the various systems and organs, each of which is considered on the plan outlined in the introductory sections. This section is conveniently arranged for reference and constitutes an excellent feature of the book. It would perhaps have been improved if a little more detail were given in regard to some of the organs, notably in the case of the pancreas, to which less than a page is devoted.

The second part is subdivided on a very similar plan. There is first a description of the methods of investigation, then variations in cellular structure and intercellular materials are considered in detail. Next, pathological substances such as fat, amyloid, hyaline substance, colloid, and pigment, are described and their significance is discussed. A large section is devoted to the consideration of tumours, their structure and differentiation from one another. Lastly, the individual systems and organs are considered and the various microscopical changes found in them are given.

The book is well prepared and well printed. The style is crisper, the sentences are shorter, and the matter is more concise than we are accustomed to find in many German text-books. There are practically no illustrations save a few diagrams, for, as Dr. Oestreich rightly maintains, no one can learn pathological anatomy from books. We can recommend this volume as one of the best short handbooks dealing with the subject.

LIBRARY TABLE.

The Management of a Nerve Patient. By ALFRED T. SCHOFIELD, M.D. Brux. London: J. and A. Churchill. 1906. 8vo, pp. 267.—Dr. Schofield's work is one which admits of being regarded under two very different aspects. In the first of these it is a valuable contribution by a practical physician towards the better management of the patients who were originally classified by Marshall Hall as "temper cases," and who now are usually described as the subjects of "neurasthenia," of "neuromimesis," or of "functional nervous disease." In its second, and, as we think less laudable aspect, it seems to be an attempt, necessarily unsuccessful, at bringing the vocabulary of a certain set of sciolists into harmony with the teachings of physiology and with the facts of life. When Dr. Schofield writes from the medical point of view he shows himself to be a skilful and painstaking physician and his practical teaching as to the actual management of cases is eminently worthy of being read and remembered.

Beauty of Figure: How to Acquire and Retain it by Means of Easy and Practical Home Exercises. By DEBORAH PRIMROSE. London: William Heinemann. 1905. Pp. 146. Price 2*s.* 6*d.* net.—Beauty of figure, being the expression of proper proportion and of perfect health, has been an ideal at which the majority of the human race has aimed in all time. As age has succeeded age selective attractiveness caused by superior physical conditions has tended to give that grand carriage of body which has been such a distinguishing mark of beauty from at least the ancient Greek times until our own. The men of classic Greece lived an open-air life and indulged in systematised gymnastic exercises for the maintenance of the magnificent beauty and strength of their forms; the Grecian women followed suit, making the cultivation of their own individual physical beauty of face and form a matter of daily treatment; they carefully studied and systematised the relations of the proportions of the human body and erected thereon an ideal. With certain modifications that standard is the one which we of to-day aim at for ourselves and work for by means of physical exercises. The women who cannot go in for courses of instruction and practice in physical culture under the direction of professional teachers may attain to the requisite knowledge by a study of this little book. Women if they care to take the trouble can from these pages learn how to walk, how to stand, and how to make their bodies supple and graceful. The exercises suggested and described are well arranged and the illustrations, of which there are 72 and which are a great feature of the volume, will be very helpful in carrying out the printed instructions for each of the many exercises.

Around the World viâ India: a Medical Tour. By NICHOLAS SENN, M.D., LL.D., Professor of Surgery, University of Chicago. Chicago: American Medical Association Press. 1905. Pp. 347.—Dr. Senn writes that this book is more especially intended for the professional friends whom he met during his travels in different parts of the world and to whom he is chiefly indebted for many courtesies and much information. The text consists of a series of articles published in the *Journal of the American Medical Association*. The first section of the book, which deals with travel as a means of post-graduate medical education, is written in a most judicious strain. The author reminds us that the greatest pleasure to a busy medical man when on a holiday is to see the work of others and the sweetest rest is a freedom from care. The book is a record of travel and medical observation in the Hawaiian Islands, Samoa, New Zealand, Australia, Ceylon, and India; through the latter country the author travelled in midsummer. The following is his observation on the climate of the last-mentioned country: "I am glad that I have seen India at its worst, so far as the climate is concerned, and that I have escaped with my life and my health unimpaired, but I will never advise any of my friends to go through a similar experience, as it involves great suffering and is attended by no inconsiderable immediate and remote risk to life." The book is an interesting souvenir and it contains many observations of value but the author has only covered a beaten track and the travelled man will not find anything new in these pages, though the author's thoughts on old topics are quite worth reading.

ROYAL DENTAL HOSPITAL.—The annual general meeting of the governors was held at the hospital on March 15th, when the annual report was received and the election of officers for the ensuing year was proceeded with. Mr. David Hepburn, one of the vice-presidents of the hospital, occupied the chair. The committee of management in its report congratulated the governors of the hospital on the continued and increasing usefulness of the institution, the number of patients treated being 27,730 and their attendances 50,911. The following motion of the medical committee was approved by the managing committee: "That in the interests of the proper treatment of the patients some scheme is urgently necessary by which those drugs which are commonly prescribed by the staff may be supplied to patients at a small charge." The committee is pleased to report that all the outstanding accounts to contractors have been paid but it regrets that it unfortunately has to face loans from the bankers of £1150 and also an overdraft to the bankers of £859 15*s.* 4*d.*, in addition to £143 9*s.* 5*d.* for outstanding accounts, and it earnestly appeals for funds to relieve it of these liabilities.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

PURE BRITISH DRIED VEGETABLES.

(McDODDIES, COVENTRY HOUSE, SOUTH-PLACE, FINSBURY, LONDON, E.C.)

THE method of preserving foods by extracting their moisture is of course well known, but we have not seen one that is more satisfactory than that known as the McDoddies process which has been recently brought to our notice. We are not informed exactly what are the details of the process but we can judge of its merits by the results. We have examined specimens of vegetables dried by this process and the results were in every instance satisfactory and pleasing. It is obvious that the process is conducted in such a way that not only are the true flavours of the vegetables preserved but what is just as important the peculiar chemical conditions of the food constituents are unchanged by the process. For example, we found that the albumins of the vegetables were preserved unchanged and in a soluble state. Cold water extracted both albumose and albumin, the watery extract giving on heating a distinct although small coagulum. The specimens examined were Julienne (for preparing soup), spinach, onions, cabbage, rhubarb, mushrooms, potatoes, and celery. It is remarkable how closely these desiccated vegetables resemble the fresh articles when they are cooked. They are of course in a shrivelled condition but on adding water they slowly resume their original bulk. The most striking example of this was, perhaps, the dried mushrooms, which, in the dried state, looked tough and unfit for consumption. On stewing them, however, they swelled and became quite tender, presenting, in fact, the palatable characters of the freshly cooked vegetable. Another feature of the process is that the original colour of the vegetables is not appreciably affected by the process and their freshness of flavour is remarkable. The method may obviously be applied to many valuable purposes.

VITTEL WATER.

(INGRAM AND ROYLE, 26, UPPER THAMES-STREET, LONDON, E.C.)

Vittel is a rising health resort in the Vosges and possesses springs, the waters of which have been used in the treatment of gouty affections, gastric and intestinal catarrh, and in kidney disorders. The water is, in fact, a slightly alkaline water, with mild purgative qualities owing to the presence of small quantities of sulphate of magnesium and sodium. The total amount of mineral constituents, however, is relatively small, as our analysis shows. In grammes per litre the results were as follows: calcium sulphate, 1·50; magnesium sulphate, 0·75; calcium carbonate, 0·3; and sodium chloride, 0·02. The composition of Vittel water bears a resemblance to that of Contrexéville which is admittedly beneficial in the treatment of gouty conditions and urinary disorders. Vittel water has very little taste and contains a small amount of free carbonic acid gas. It shows an excellent degree of organic purity.

PEPTIC MARMALADE.

(MESSRS. BATGER AND CO., BROAD-STREET, RATCLIFF, LONDON, E.)

There is something to be said dietetically in favour of this marmalade, since care has been taken to exclude in its preparation the use of hard peel. It is likely enough that hard peel may prove in the case of many persons indigestible. Peptic marmalade is of good consistence and is certainly palatable.

(1) SALMON AND SHRIMP PASTE; AND (2) KUVIA.

MESSRS. FARQUHAR, NORTH, AND CO., SHENTON-STREET, LONDON, S.E.)

Potted delicacies have a useful rôle in dietetics, since they serve to encourage the relish for food. Little need be said about these preparations except that their flavour is appetising and that we could find no objectionable constituents. Kuvia has the pronounced flavour of anchovies and is evidently coloured with oxide of iron.

COGNAC BRANDY (MEDICAL RESERVE).

FROMY ROGÉE AND CO., COGNAC. AGENCY, E. G. SAWORD AND CO., 43 AND 45, GREAT TOWER-STREET, LONDON, E.C.)

We feel certain that this brandy is honestly described as Cognac brandy distilled from wine only. It possesses those delicate æsthetic qualities and fragrance characteristic of the genuine produce of the Charente. It gives on analyses results that are fully in accordance with standard requirements. The total secondary products, for example, given in grammes per hectolitre of absolute alcohol present amount to 240, the ethers to 90, the higher alcohols to 100, the furfural to 1, the aldehydes to 13, and the acidity to 36. These figures serve to account for the peculiar lightness of the spirit, heavy brandies showing over 350 parts per 100,000 parts of secondary products. The brandy is free from an excess of extractive matters. The flavour is delicate and attractive. Altogether the brandy is of a fine elegant character and well adapted for medicinal purposes.

EKENBERG DRIED MILK PRODUCTS.

(THE EKENBERG MILK PRODUCTS CO., LIMITED, 5, COPTHALL-BUILDINGS, COPTHALL-AVENUE, LONDON, E.C.)

We have submitted to analysis three samples of these products and find the results to be in accordance with the description of each. No. 1 sample is said to be made from partly skimmed milk, while to this description the words "rich in cream" are added. Our analysis gave the following results: moisture, 5·40 per cent.; mineral matter, 6·00 per cent.; fat, 19·20 per cent.; milk, 47·43 per cent.; and proteid, 21·87 per cent. Sample No. 2 is also said to be made from partially skimmed milk and according to our analysis contains 7·20 per cent. of fat, while No. 3 is said to be made from separated milk and in our analysis we found that the fat amounted to 2·80 per cent. It will be seen that these figures accord with the statements made as to the quality of the milk from which the dried product was obtained. The chief merit of the preparations in our opinion is that when added to water they give a fluid which not only looks like fresh milk but tastes like it also.

SILIG FLOUR AND BREAD.

(MESSRS. BOWYER AND PRIESTLEY, BUCKDEN MILLS, HUNTINGDON.)

This is a finely-ground brown wheaten flour in which are retained the entire nutritious qualities of the wheat. The analysis is not disappointing, as it shows a much higher proportion of nourishing principles than is found in white flour. The results were as follows: moisture, 13·00 per cent.; mineral matter, 1·80 per cent.; proteid, 15·92 per cent.; starch, 66·66 per cent.; and fibre, 2·62 per cent. It will be seen that the proteid occurs in the maximum amount found in good wheat, while the proportion of valuable mineral constituents is equally satisfactory. We have also tested a sample of bread made from the flour and the result is a loaf of uniform texture free from large irritating particles and of a pleasant nutty flavour.

STERILOID MILK.

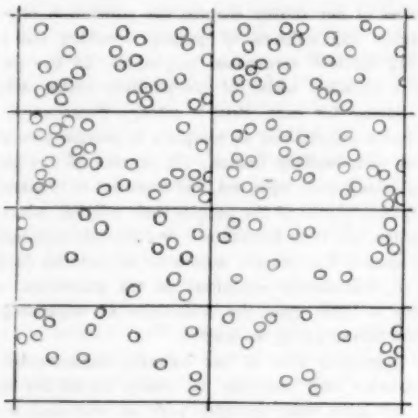
(THE BRITISH STERILOID CO., LIMITED, NORTH BRITISH AND MERCANTILE-BUILDINGS, DUBLIN.)

This is a well-prepared dry product of milk presenting the composition of milk of good quality freed from water by evaporation. Our analysis gave the following results: moisture, 6·40 per cent; mineral matter, 5·50 per cent.; proteid, 14·46 per cent.; fat, 24·80 per cent.; and sugar, 48·84 per cent. On adding water to form a paste first of all and then finally diluting until the specific gravity is that of normal milk the result is a fluid resembling milk both in appearance and in taste, while as analysis shows it presents an analogous composition.

New Inventions.

A NEW HÆMACYTOMETER.

IN this instrument, as hitherto made, the squares on the slide are one-tenth of a millimetre in each dimension, so that with normal blood (5,000,000 corpuscles to the cubic millimetre) the dilution adopted and depth of cell yield 50 corpuscles to the square. The average number in two squares thus gives the percentage to the normal. Some observers find it difficult to count the number of corpuscles in the square when this approximates the normal, and still more when the number exceeds the normal, as it sometimes does in peculiar morbid states. To facilitate counting I have



The above figure illustrates the facility in counting afforded by the division of each square into two half squares. In the upper two squares each half square contains 25 corpuscles, each square 50, and the two squares 100 corpuscles, or 100 per cent. (normal). In the lower two squares each half square contains 13 corpuscles, each square 26, and the two squares 52 corpuscles, or 52 per cent. of the normal.

suggested that the squares should be divided horizontally. The instrument is therefore now made with the squares thus divided, so as to form parallelograms, each one-tenth of a millimetre in length and one twentieth of a millimetre in width. There are thus two of these parallelograms to each square; four of them contain 100 corpuscles in blood of normal standard. The comparison with the normal is thus as simple as before, while the numeration is more easily made. The instrument is made by Messrs. Hawksley, 357, Oxford-street, London, W.

W. R. GOWERS, M.D. Lond., F.R.C.P. Lond.

Queen Anne-street, W.

MEDICINE AND THE LAW.

A Successful Prosecution for Libel.

AT the recent sessions of the Old Bailey a man named Charles Foxlee pleaded guilty to an indictment charging him with publishing a false and defamatory libel concerning Dr. A. R. Waddell of Potters Bar and was bound over in his own recognisances, with additional security from two sureties, to come up for judgment if called upon to do so. Considering that the graver charge of threatening to publish the same libel with intent to extort money from the prosecutor was upon the record against him but was not proceeded with upon his pleading guilty to the libel itself, and taking into account the gravity of the baseless accusations that he made, together with the outrageously vindictive manner in which he circulated them during several years, Foxlee may be considered to have got off very lightly. The case was referred to briefly in THE LANCET of March 10th, p. 701. Dr. Waddell in 1898 attended the defendant's wife at her confinement and two days later thought it advisable to administer a saline injection to the infant owing to the nurse reporting that there had been hæmorrhage from the navel cord. Soon after this the parents ceased to be attended by Dr. Waddell but were not at this time unfriendly in their attitude towards him. Before long, however, they appear to have become possessed with the idea that the anæmia from which their child, no doubt, suffered was due to hæmorrhage at the time of his birth, that this had been caused by negligent treatment on the part of Dr. Waddell, and that the operation which he performed had been cruel, unnecessary, and injurious. In the course of the same year—1898—Dr. Waddell heard that the defendant, the child's father, was making false and grossly defamatory statements with regard to him and warned him at an interview not to do so. Foxlee after this left Potter's Bar and for three years the prosecutor heard of him no more. In 1902, however, he returned and calling upon Dr. Waddell demanded compensation for the alleged condition of his child and had to be turned out of the house. A letter threatening legal proceedings to enforce this claim followed and afterwards another was received, both being left by Dr. Waddell to the Medical Defence Union to deal with, the result being that no more was heard of either. These abortive threats were followed by a series of scurrilous and threatening letters and post-cards written to the prosecutor and to his solicitors. Efforts were made to stop them without recourse to legal process but remonstrance was unavailing and they culminated in one which inclosed a libellous pamphlet and contained a threat to publish it broadcast in the district in which Dr. Waddell practises unless the "compensation" demanded were paid within four days. This was in last October and the threat, after being repeated in November, was carried out shortly before Christmas. The pamphlet, widely circulated among Dr. Waddell's neighbours and patients, contained accusations of a highly libellous character and it became absolutely necessary to put a stop to the defendant's conduct in such a manner as to insure, if possible, against any repetition of it. This has been done, as has been stated, by means of criminal proceedings, which have terminated with a plea of guilty and in the binding over of the defendant to come up for judgment when called upon. At the preceding sessions, however, an adjournment had been granted in order that he might have the opportunity of pleading "justification" (i.e., that the alleged libel was true and that its publication was for the public good), so that his withdrawal of his charges was made at the last possible moment. His counsel, Mr. Percival Hughes, in addressing the Recorder in mitigation of sentence, spoke of the defendant's mind as having almost become unhinged by dwelling upon the subject of his child's illness and no doubt this view was accepted by the court. It is to be hoped that the defendant will recognise the clemency with which he has been treated and that the fact of certain punishment hanging over his head will deter him from renewing his attacks. At the conclusion of the case Sir Forrest Fulton called the prosecutor into the witness box and addressing him said: "Dr. Waddell, I desire to express my great sympathy with you in regard to the scandalous, false, and malicious libel which has been published concerning you, and which is now declared in open court to be entirely without any foundation. I can only hope the circulation of these wicked libels will have no permanent injurious effect upon your professional position." Dr. Waddell and the Medical Defence Union are to be congratulated upon having brought this prolonged persecution to a conclusion.

BRISTOL GENERAL HOSPITAL.—The annual meeting of the governors of this institution was held on March 12th under the presidency of the Lord Mayor. The medical report stated that 2351 in-patients had been admitted, compared with 2344 in 1904. The out-patients numbered 39,089, an increase of 640 compared with the previous year. During the year 440 patients had been sent to the Victoria Convalescent Home. The financial statement showed that the ordinary receipts amounted to £11,174, the ordinary expenditure was £13,387, and a deficit balance of £2213 remained. Mr. J. Storrs Fry stated that a sum of about £10,000 would be required to meet the expenditure required for the erection of an isolation block of buildings for the hospital and also to provide additional accommodation for the nursing staff.

THE LANCET.

LONDON: SATURDAY, MARCH 17, 1906.

The Census of the British Empire.

THE Commissioners of the English Census have just issued from Somerset House what appears to be a valuable report and summary of the census returns of the several colonies and possessions of the British Empire. In the English Census Reports of 1881 and 1891 the only published data of the kind were limited to details of the area and population of the several parts of the British dominions, no attempt being made to compare the social and other conditions of the people. Whilst the tabulation of the results of the recent English Census was in progress Mr. CHAMBERLAIN, at that time Secretary of State for the Colonies, expressed a wish that the statistics in the census reports of the several British colonies, dependencies, and protectorates should be collated and analysed and that comparative tables should be prepared similar to those employed in the English report, and further, that the whole should be embodied in a separate volume to be styled the "Census of the British Empire." The elaborate Blue-book before us is the result and it will certainly strike many as strange that while it relates to matters distinctly of Imperial concern, it is addressed officially to the President of the Local Government Board instead of to the Colonial Secretary who would seem to be more immediately interested in its contents. We should add that in presenting it the Registrar-General and his colleagues apologise for delay in its preparation. The apology is quite unnecessary; considering the mass of information to be digested and collated before such a Blue-book could take shape we think that our statistical bureau is to be congratulated upon punctual attention to a colossal task.

The work has involved the critical examination and analysis of returns concerning the topography and demography of 400,000,000 of His Majesty's subjects scattered over every continent of the globe and including representatives of every race, creed, language, and caste, and in our judgment the Census Commissioners deserve great credit for the thoroughness and the expedition with which this important contribution to Imperial literature has been produced for the information and guidance of the legislature. The volume is essentially an epitome of the reports furnished by the various census authorities at home and abroad, and we are not surprised to learn that owing to want of uniformity in tabulation of the local census returns it has been found impracticable to construct the present report precisely on the lines adopted for the English Census. Census taking in some of the British dominions beyond the seas presents exceptional difficulties, among which may be mentioned the trying character of the climate, the impassibility of many of the roads, the want of competent enumerators, and, above all, the ignorance and superstition of the native races, some of which are stated to fear that census particulars may be used to their disadvantage for purposes of taxation. These difficulties are enhanced by the world-wide extent of the British Empire. For financial reasons the authorities of some of our East Indian and African possessions, as well as of those of the West Indian Islands, were unable to take a complete census. The best available estimates of such populations have, nevertheless, been procured and inserted in the tables. The reports from which the tables in the present volume have been compiled range in bulk from a ten-page pamphlet concerning the 2000 inhabitants of the Falkland Islands to an elaborate review extending to more than 60 volumes dealing with the manifold races of our Indian Empire, the population of which approaches 295 millions of persons speaking not fewer than 147 distinct vernacular languages. In the present report a detailed series of comparative tables will be found giving for each British colony, dependency, and protectorate information as complete as possible concerning (*a*) area and dwelling houses; (*b*) number of the people, distinguishing their ages, sex, and condition as to marriage; and (*c*) birth places of the people, their religion, education, occupation, and their infirmities. We can only here indicate briefly some of the general lessons to be deduced from the mass of information contained in the Blue-book, while dwelling a little upon the difficulties of estimating our physical infirmities as an empire.

The aggregate area of our colonies, dependencies, and protectorates now amounts to nearly 12,000,000 square miles, or more than one-fifth part of the land surface of the globe. At the time of the 1861 census it comprised about 8,500,000 square miles, so that in a period of no more than 40 years the British Empire has increased in extent by about 40 per cent. Of this vast territory somewhat more than 4,000,000 square miles are situated in North, Central, and South America, 3,000,000 in Australia, 2,500,000 in Africa, and nearly 2,000,000 in the Indian Empire and other parts of Asia, while the portion that lies in Europe constitutes an inconsiderable fraction of the whole, amounting to only 125,095 square miles, of which 121,089 constitute the area of the United Kingdom. Exclusive of the inhabitants of North-Western Rhodesia, of whose number no estimate is obtainable, the British Empire is believed to contain at the present time a total population of about 400,000,000, of which 300,000,000 are in Asia, 43,000,000 in Africa, 7,500,000 in America, and 5,000,000 in Australia, the remainder being in the United Kingdom and the islands of the British seas. The growth of the population can be estimated only very roughly because of the incompleteness of the earlier censuses, especially those of India. Moreover, the real increase of the population has been rendered uncertain by the extension of the area included in the census operations. The rate of increase in the population of the entire British Empire is, of course, governed by that of India, where in a single decennium the increase is believed to have amounted to 23 per cent. It is important, however, to note that in consequence, amongst other disasters, of famine and plague the increase in the Indian population fell between 1891 and 1901 to less than 3 per cent. Excluding India,

the rate of increase in the British Empire, which had been 12 per cent. between 1861 and 1871, rose to 15 per cent. between 1871 and 1881, and then fell to less than 12 and 9 per cent. respectively in the next two decennia. The factor which largely governs the fall in the increase of population is believed by the Commissioners to be the continued depression in the birth-rate which has now become general almost everywhere. In Australia, and especially in South Australia, in Victoria, and in New South Wales, where the matter has recently engaged the attention of a Royal Commission, the fall in the birth-rate is remarkable. This is a matter that must be looked squarely in the face by all thoughtful persons, and to our mind certain obvious reasons for the existing condition of things might be more often made the subject of plain speaking. For whether the decline in the birth-rate be regarded as a proof of waning fertility or as an expression of deliberate selfishness it is equally a menace to our well-being as an empire and equally an indication of a condition of things which is physically and socially pathological. But to turn to more special instances of our infirmities as revealed by the first genuine Imperial census, we find that returns of sickness at the date of the census have been obtained from various quarters, but that before utilising these for purposes of comparison it is necessary to bear in mind the initial difficulty of defining the term "sickness." The Commissioners rightly insist, in view of past experience, that the incidence of sickness is considerably modified by conditions of climate and that the amount of sickness in a community varies according to the time of year. From most countries returns were obtained of the numbers of the blind, the deaf and dumb, the lunatic, and the leprous. That these returns would furnish interesting information might naturally have been expected, but except in so far as they emanate from public institutions they are believed to be untrustworthy, mainly because experience, even amongst coloured races, shows that parents are unwilling to admit the existence of serious bodily or mental defect in the case of either themselves or their offspring. With regard to infirmities, of whatever kind, the Commissioners tell us that the machinery of an ordinary census is not adapted to furnish statistics of the necessary accuracy. For, in the first place, there is the difficulty of deciding, in the absence of a fixed standard, what degree of impairment of sight, hearing, or mental capacity constitutes blindness, or deafness, or insanity. Secondly, there is the difficulty last alluded to, which would seem to us more likely to occur among races speaking a foreign language than among persons of our own race and colour. The proportion of the population afflicted with various infirmities varies considerably in different parts of the empire. With regard to the blind, it appears that, taking as a standard the ratio of blind to population in the United Kingdom, the proportion of blind persons is twice as great in British Honduras and in Mauritius; between two and three times as great in Trinidad, Tobago, and Malta; three times as great in St. Lucia, the Bahamas, and Gambia; and nine times as great in Cyprus. In Cyprus, however, the enumerators appear to have included among the blind many persons whose vision was merely defective. The report states that in India the number of blind persons has decreased since 1891 in greater proportion than any other infirmity. Although the relatively high mortality among blind persons in the famine years had some share in that diminution, yet a considerable part of it is traceable to the greater activity of the medical establishments, for the total number of successful operations for cataract in the main provinces of India was 146,295 in the decennium 1891–1900, as compared with 68,226 in the preceding ten years. In Ceylon, where the proportion of blind males is half as great again as that in this country, the Commissioners state as a reason for this excess "the more glaring atmosphere, the dirty surroundings of the lower classes, the presence of flies, the neglect and improper treatment of small-pox, ophthalmic diseases, and leprous and syphilitic taint." As regards the deaf and dumb we are told that, speaking generally, their proportion to population differs little from that which obtains at home. In the Dominion of Canada, Grenada, British Honduras, and Gibraltar, however, the proportion is twice as high, in Cyprus nearly three times as high, and in Gambia it is nearly four times as high as in the United Kingdom. In the Indian report it is stated that "the extent to which deaf-dumbness may be acquired after birth is uncertain." Discussing the causes of this infirmity, the Indian authorities connect it with cretinism which has been assigned by some to the deleterious properties of certain rivers flowing from the Himalayas. It is noted that deaf-mutism does not specially affect persons of any individual religion or caste. The Mohammedans, in spite of their consanguineous marriages, are not more prone to the affliction than are the Hindus who eschew such connexions.

The proportion of the insane in nearly all the colonies is much lower than that in the United Kingdom. In this country the proportion of the population returned as lunatic and imbecile, or feeble-minded, is the same as that of Malta—viz., 43 per 10,000. The proportions most nearly approaching this are 41 in Victoria, 36 in New Zealand, 32 in New South Wales, 31 in Canada, the Bahamas, and South Australia, 30 in the Bermudas and Grenada, and 25 in Sierra Leone and in Tasmania. Both in India and in Ceylon the proportion of insane and mentally defective persons is steadily decreasing—that is, if the returns are to be relied on. The reporters, however, utter a warning that some of the decrease in the published figures is "probably due to a difference in the interpretation and application of the rule on the subject." Returns of the leprous were received from ten of our colonies, but it is to be regretted that among our Asiatic dependencies, in almost all of which leprosy is prevalent, returns are available for India alone. At the last census 97,340 lepers were enumerated in India, 1230 in the Cape of Good Hope, 135 in Cyprus, and smaller numbers elsewhere, but in none of the other colonies did the proportion of the leprous reach 1 per 1000 of the population. The disease is of very little numerical importance except in India, in which country it is gratifying to learn that the efforts to eradicate this scourge are meeting with some success. From the Indian census report it appears that the census of 1881 showed a considerable increase in the number of lepers in that country, and some years later, when public attention was attracted to the subject by the death of Father DAMIEN, a leprosy

commission visited India for the purpose of ascertaining the truth about the alleged spread of the disease, with a view of suggesting means for its eradication. The census of 1891, which was taken whilst the Commission was still in India, showed a marked decline in the number of lepers, and the Commission had no difficulty in disposing of the cry that leprosy was an imperial danger.

In conclusion, the Commissioners summarise the results of their experiences in census taking both at home and abroad for the explanation and guidance of those who may hereafter be entrusted with similar functions. In the first place, the desirability is insisted on that in all parts of the Empire a census should, as nearly as possible, be taken simultaneously, regard being had to differences of climatic, social, or religious nature which may necessitate a departure from this rule in certain definite cases. Regarding the interval between census enumerations it is urged that in no case should this exceed ten years. The Commissioners wisely remark that it is better to ask for a moderate amount of information and to concentrate efforts on getting that amount with the greatest attainable accuracy than to call for much information on many subjects of a more or less desultory character. It is further, in their opinion, desirable that as far as practicable the census questions submitted should be everywhere uniform in character. This requirement does not necessarily mean uniformity in results, for much depends on interpretation of replies, on the classification of statistics, and on the form in which they are presented. Lastly, the Commissioners suggest, in view of the taking of another Imperial census in 1911, the arrangement of a conference between the representatives of our colonies and our home census authorities for the purpose of discussing essential points of difference and arriving at some agreement with respect thereto. As the present is the first serious attempt to prepare a full comparative return of the results of the census of the entire British Empire the Commissioners express the reasonable hope that, notwithstanding the imperfections inseparable from a first attempt, the present volume will awaken fresh interest in Imperial census statistics and whilst tending to promote greater uniformity in the future will create a fresh link of sympathy between the census authorities of the mother country and those of her vast colonies and dependencies.

An Outbreak of Water-borne Enteric Fever and its Lessons.

THE recognition of the fact that enteric fever is at times spread by channels other than water or milk—as, for instance, by dust, shellfish, or polluted soil—has tended in some degree to divert attention from the enormous importance which is to be attached to the purity of public water-supplies. And this importance remains, although, as we mentioned last week, at p. 693, the bacillus typhosus tends to disappear rapidly from "raw" river water. There is, unfortunately, a fashion in epidemiology as well as in clothes and some medical officers of health are a little too prone to lose sight of the importance of relativity in the domain of etiology. One of the most recent and instructive lessons on the subject of water and enteric fever comes to us from the Rhondda urban district, in which place during 1904–05 there was an epidemic of enteric fever which, involving only a small and circumscribed portion of this district, was responsible for 399 cases and 26 deaths between Nov. 1st, 1904, and Feb. 10th, 1905. Upon this epidemic a report of a high order of merit has been made by Dr. J. D. JENKINS, the local medical officer of health.

The district in question has a rapidly increasing population engaged in coal mining and topographically it is divided into two parts by a range of mountains. The water-supply is derived from two main and several subsidiary sources and the epidemic now under consideration was confined almost exclusively to the area of supply of one of these subsidiary sources—i.e., no less than 93·4 per cent. of the total number of cases notified in the whole district were received from this small area which constitutes about one-twenty-sixth of the district in extent and one-sixteenth in population. Of the 1320 houses embraced within the limits of the area involved in the epidemic 267, or 20·2 per cent., were invaded by enteric fever, while of the 19,441 houses in the remainder of the district only 22, or 0·11 per cent., were invaded. Similarly with regard to population. Out of the 7605 persons occupying the water area 373, or 4·9 per cent., were attacked, while the percentage incidence upon the remaining 115,090 persons was but 0 2, the only material difference between the two groups of people being that of water-supply. The water for this smaller population was derived from a gathering ground some 18 acres in extent, which is made up for the most part of rough pastoral land with here and there a small copse or a swamp. On the eastern side the ground was bounded for its whole length by the main road on the far side of which is a quarry in work. Over this area there are eight small catchpits from which the water is conducted to small settling tanks and filter beds, but at the time of the epidemic four of the catchpits were not being used owing to the fact that the water collected by them was regarded as being unsafe for drinking purposes. These catchpits were fed mainly by springs but apparently surface water from the road occasionally reached the pits. Although the gathering ground is not traversed by a footpath human excrement was seen more than once in the neighbourhood of some of the catchpits. We do not propose to follow step by step the evidence connecting this water with the epidemic; it must suffice to say that opportunities for fæcal pollution of the water were obvious and that the general behaviour of this outbreak was consistent with the view that it was water-borne and inconsistent with the view that any other of the several possible agents had been operative. We should, however, have liked more information as to the reasons why this gathering ground was not properly protected from the risks of pollution and as to what steps have been taken to prevent its further pollution in the future.

But this case is illustrative of what is not improbably taking place in practically every county of England and Wales—i.e., the consumption of water which is exposed in some degree to the risks of specific pollution, and it may be added that probably the provision of additional supplies similarly exposed to pollution will receive Parliamentary

sanction during the current session. Schemes will be submitted and, if necessary, expert evidence adduced in support of such schemes and in the absence of a very strong opposition sanction will be given to gathering grounds which are as much exposed to the risks of contamination by human excrement as was the case in the Rhondda valley. The committees before which these Water Bills come are not composed of those who are able to deal adequately with the problems involved and no independent inspection of the gathering grounds, and so on, is made prior to the passing of the Bills. To remedy this very undesirable state of affairs it is necessary that a careful survey of the areas involved should be made by Local Government Board inspectors whose knowledge thus obtained should be available for the information and the assistance of the committees. In this manner it would be possible to make provision in the Bills for proper precautions or, where necessary, for the substitution of another and better scheme. Until this is done the story of the Rhondda valley outbreak will be retold again and again in different parts of England and Wales. With reference to existing supplies we should like to see a general survey commenced, county by county, of the whole of England and Wales by the medical inspectors of the Local Government Board and the facts appertaining to each supply clearly set out with maps and diagrams for reference purposes. The existing staff would need material increase if anything approaching an early report was desired but in the meantime we should like to see a beginning made and the fact that such a survey was in progress would in itself produce a good effect. An alternative to this proposal is at once to carry out the recommendations contained in the third and fourth reports of the Royal Commission on the Treatment and Disposal of Sewage—i.e., to establish throughout the country large Rivers Boards invested with powers to take definite action with reference to pollution in the several watersheds. But there are apparently no indications at the present juncture of legislation on the lines laid down by the Commission, and in the meantime progress might be made by adopting the suggestions put forward above.

A Hospital for Paying Patients.

THE letter on hospital finance which was recently contributed to the *Times* by the Hon. SYDNEY HOLLAND, and which leads up to the suggestion that it would be desirable to establish in London a surgical hospital for the reception of patients able to pay the management for the expense of their nursing and maintenance and to make their independent pecuniary arrangements with their medical attendants, is one that demands careful consideration alike from the public and from the profession. Mr. HOLLAND, as the chairman of the largest metropolitan hospital, and as a man who, unsparing of his time and energy, has for many years given the closest attention to all the problems of hospital management, speaks from extensive experience with an authority that all will readily allow. He declares that in his opinion the constant increase in the demands made on behalf of hospitals is mainly due to the increasing resort to them of people who are neither rich nor very poor, who can afford a little but not a great deal, small shopkeepers, clerks, tradesmen, and so on, who become the subjects of maladies which have recently been brought within the domain of surgery, and from which those who now suffer from them expect to be cured by some form of operation. The expectation in a large proportion of the cases is quite reasonable, but the possibility of its fulfilment depends upon the complete maintenance of aseptic conditions, or, in other words, upon the removal of the patient to a building and to surroundings constructed and administered with special reference to his requirements, while in many instances the operation is of a character that could only be attempted by a surgeon whose position upon the staff of a hospital has given him familiarity with the procedure to be employed. The necessary conditions are supplied by hospitals and, perhaps, by a few nursing homes, but the classes of which Mr. HOLLAND speaks cannot, he tell us, "afford a really good nursing home, and those that are not really good are thoroughly bad." There are many operations which no prudent surgeon would undertake in an ordinary private house occupied by persons of the class which Mr. HOLLAND describes; and therefore, he says, in spite of their disinclination to accept a charity which they feel was never intended for them, such persons are compelled to resort to a hospital. As a result, the wards are largely filled with patients who belong to the class which is most expensive to the hospital, who have no wish to go to hospital, for whom the hospitals were not intended, but who have no option. Mr. HOLLAND is of opinion that the conditions which he describes might be effectively met by the construction of a properly organised private hospital, such as may be found in some American and colonial cities, provided not only with general wards, in which the charges were sufficiently low to suit all who can pay, but also with a large number of separate rooms of all sizes and with special suites of apartments, so as to accommodate every grade of society and to suit everyone's purse. To such an institution every surgeon might send his patient and continue in attendance upon him, and the patient would make his private arrangements with regard to surgical fees. The hospital would charge only for accommodation, food, and nursing. Such an institution, Mr. HOLLAND thinks, would relieve the charitable hospitals from the strain of maintaining many of the most expensive of their patients. It would set free numbers of beds that are intended for poor people and patients could be allowed to remain longer in the hospitals. It would prevent the sick from being compelled against their wish to accept a charity that was never intended for them.

Mr. HOLLAND'S description of a certain class of hospital patients is, of course, perfectly accurate, but we hesitate to endorse his belief that many of them desire to pay adequate sums of money for their treatment. And we doubt whether the establishment of paying hospitals, even if so arranged that the public would receive recommendations of them from the general practitioner, would distinctly relieve the evils of hospital abuse. It is unfortunately only too true that large numbers of people who could pay a moderate sum for maintenance and for surgical attendance do resort to hospitals; and it is exceedingly probable that, if the propriety of their doing so is challenged by the authorities, they may express quite poignant regret for the necessity in which they find

themselves. It is generally believed in the medical profession that such regret is often only skin deep and that the patients accommodate themselves to the position with great and even touching resignation. And we cannot believe that the conditions described by Mr. HOLLAND are accountable for more than a small portion of the "abuse" to which he refers. We published last week a report of the meeting of the council of the Metropolitan Hospital Sunday Fund at which a statement was made, on behalf of the Committee of Distribution, to the effect that the serious increase in the number of out-patients is detrimental to the welfare of the hospitals and of the patients, inasmuch as they are a burden to the hospitals and prevent the hospital staffs from giving the necessary attention to serious cases. On this occasion Sir WILLIAM S. CHURCH, Sir DYCE DUCKWORTH, and Mr. SYDNEY HOLLAND joined in denying that the out-patient departments were abused, at any rate to the extent popularly believed, but for our part we consider that there has been no great exaggeration. Apart from this aspect of the question it is perhaps not open to doubt that the establishment of such a hospital as that contemplated by Mr. HOLLAND, if it did not diminish the abuse of charitable hospitals by the well-to-do, would at least diminish the excuses for it. Also it would render it more easy for the authorities of these hospitals to guard admission both to the out-patient departments and to the wards by proper precaution against the intrusion of persons well able to pay.

But whether the proposed hospital for paying patients would meet a demand and could be so conducted as to be self-supporting is not so certain as many of our lay contemporaries have decided. Mr. HOLLAND says in his letter to the *Times* that in London, so far as he knows, there is only one pay hospital, Fitzroy House, which he describes as "good, well-managed, and comfortable, but too small." He does not explain for what it is "too small," whether for the conduct of its work in a satisfactory manner or for the reception of the number of persons who desire to enter it. If the latter be meant there is obviously room for duplication or enlargement. Mr. HOLLAND also says that there are pay wards at Guy's Hospital, St. Thomas's Hospital, the Great Northern Central Hospital, and the Poplar Hospital; but the public necessity which he describes could only be met by a hospital which was as accessible as a hotel and in which all the surgeons using it would stand upon a footing of absolute equality. There must be no question of the preponderating influence of the medical staff of an allied charitable institution. Mr. HOLLAND has omitted from his enumeration two establishments, the experience of which might furnish valuable data with regard to the financial prospects of the institution which he desires to see. One of these is the King's Hospital for Officers in Grosvenor-gardens and the other is the Institution for Invalid Gentlewomen in Harley-street. We are not informed with regard to the charges made at the King's Hospital but it provides precisely what Mr. HOLLAND requires for the class of patients with which it deals; and we have no doubt that the lady who chooses to be known as Sister AGNES could impart information which would be of the highest value to any society of persons who might desire to found such an institution as that which Mr. HOLLAND suggests. The other establishment is partially supported by voluntary charitable contributions and, we believe, finds them indispensable. There are then, it seems to us, sufficient sources from which evidence can be drawn as to the chances of financial success for a paying hospital upon the usual lines, and we do not think that the prospect is a very attractive one. The objection to the ordinary nursing home is that it is often the property of a retired nurse or other person not possessing sufficient capital for necessary expenditure, so that it is liable to fall short of perfection in matters of detail which may be all-important, while at the same time its proprietor has to make a living out of the restricted accommodation which a single house will afford. In such circumstances, if the home has a sufficient connexion among leading surgeons, the proprietor may be able to keep it full of patients paying high charges for the rooms which they occupy, and we have even heard a story of an intending patient of very moderate means, who had made a timid request for some abatement of these charges, being confronted by a shrill virago who declared that the home was not conducted for amusement. We do not think that what Mr. HOLLAND desires will be practicable and satisfactory in any other way than as a perfectly self-supporting institution not affiliated to an existing charity and not subsidised by any, and it is manifest that it could only be successfully conducted under strict surgical supervision. This almost amounts to suggesting that a group of medical men, in particular of hospital surgeons, should form themselves into a joint-stock company for the purpose of establishing a nursing home which should be beyond reproach and which should be conducted at rates to pay a reasonable interest upon the capital required. This is a prospect that we do not view with much approval.

Annotations.

"Ne quid nimis."

CRIER AND WIFE *v.* HOPE AND CURRIE.

THE case of Crier and Wife *v.* Hope and Currie which has engaged the attention of the courts for some days is one of great interest to all medical practitioners. The plaintiffs sued the defendants, a firm of medical men, to recover damages for alleged negligence on the part of Dr. G. B. Currie, whereby he was said to have communicated scarlet fever infection to the female plaintiff. A report of the main details of the case will be found in another column. The action raises some points of great importance with regard to the possible conveyance of infection by medical men to their patients. In his evidence the plaintiff contended that Dr. Currie was bound not to attend any infectious cases before coming to attend his wife. Apparently he considered also that a reasonable precaution on the part of a medical man would be not to attend any scarlet fever patients if he expected within a short time to be in attendance on a patient in her confinement. Theoretically this is no doubt a counsel of perfection which all medical men would wish to follow, but practically it is impossible. In many instances a medical practitioner does not know until he sees his patients what disease they may be suffering from, and with the best

intentions in the world from time to time, especially when epidemics are prevailing, he may be brought into contact with various infectious diseases. We may therefore in discussing this case start with the assumption that it is quite impossible for the ordinary general practitioner in the course of his daily work to avoid coming in contact with infectious diseases of different kinds. Allowing this to be so, what is his duty to his other patients? The obvious answer to such a question must be that he is bound to take every possible precaution to avoid carrying infection from one patient to another. As Mr. Justice Lawrence pointed out to the jury in his summing up in the case in question, the mere fact that a medical man has by accident carried infection to one of his patients does not render him liable so long as it is not due to any want of care on his part. If such an unfortunate circumstance does occur the question to be answered is, Were the precautions taken those which a reasonably skilful medical man would take? In answer to this question the jury agreed that Dr. Currie had taken the usual precautions and found a verdict therefore for the defendants. It is impossible and inexpedient to attempt to lay down strict rules as to the nature of the precautions to be adopted in any given case. The medical men who gave evidence upon this point were far from unanimous in their opinions. Our own view is that it is better to err on the side of safety and to endeavour to take every conceivable precaution rather than to run any undue risks. Even if the puerperal woman is not specially prone to develop scarlet fever, yet in the circumstances she undoubtedly is predisposed to almost any kind of infection if only from the fact that she is not in her usual health, and in view of the close personal contact which must exist between the medical man and his patient during a confinement the precautions to be taken to avoid infection can hardly be too stringent. Whenever possible it is undoubtedly best for the medical man for the time being to give up attendance on cases of midwifery. In the event of the practitioner working single-handed this may prove impracticable but where there is an assistant or a partner such a solution of the difficulty should not be beyond attainment. It may be urged that patients do not like changing their medical attendants, especially in the event of their expecting a confinement, but if the reason for such a change is pointed out to them any such objections should be easily overcome. Naturally, it must frequently happen that such a course of action is not feasible. In these circumstances the practitioner must endeavour to protect his patient from any risk of infection to the utmost of his ability. The safest and therefore the best kind of safeguard is undoubtedly a complete change of clothing and a bath with the free use of antiseptics. In busy general practice so complete a disinfection often must prove quite beyond realisation. Such simple precautions, however, as the wearing of an apron, to be obtained in almost every household, during the conduct of a confinement and the wearing of a light waterproof overall when visiting infectious cases such as scarlet fever, in addition to the most thorough cleansing of the hands, should not be beyond the powers of even the most busy general practitioner. The knowledge that he has taken the utmost precautions cannot fail to prove a comfort to the medical practitioner who sees infection spreading from one of his patients to another, while the haunting dread that he himself may be the source of infection cannot but increase the many mental anxieties inseperable from the life of the overworked and harassed medical man. The further proof which such a trial as this affords, that even a medical man may be put to the expense and annoyance of defending his actions in a court of law, will render him less likely to relax any one of the rules which he has laid down for his conduct in these cases, even although constant familiarity with such risks and long immunity from an accident may tend to lessen his sense of the danger of infection to which his patients inevitably must be subjected from time to time.

BARMAIDS IN BURMA.

IN connexion with the leading article on Barmaids which appeared in THE LANCET of Jan. 27th, p. 239, we have received from a correspondent at Rangoon an interesting account of the successive steps by which the employment of women in drinking-bars has been prohibited in Burma. During the last few years the proprietors of such bars in Rangoon had imported and employed English women for the purpose of attracting customers and of increasing the consumption of liquor, and the evils and scandals incidental to, or consequent upon, the practice became so manifest to the respectable portion of the British community as to lead them to take active steps in the direction of reform. The organisers of the movement determined to refrain from resting it upon the religious or temperance aspects of the question and took their stand solely upon grounds of humanity, hygiene, and public policy. A petition was addressed to the Financial Commissioner of Burma asking for a total prohibition of the employment of women in drinking-bars and the Commissioner, after proper investigation, issued the necessary order. The bar proprietors appealed to the law and the order of the Commissioner was declared to be in excess of his powers, but in December, 1903, a Bill to amend the Burmese excise law was introduced by his successor and was passed by the Council in January, 1904. Under its provisions rules absolutely prohibiting the employment of women in public drinking-bars will come into force in Burma in the now approaching month of April. The law in Bengal has been strengthened in the same direction and the employment of women in the manner indicated has already been forbidden in Calcutta. It is manifest that the possible degradation of English women before Orientals would for many reasons be specially objectionable, but in all essentials the conditions are alike in all countries, and we cannot but congratulate the Governments of Burma and of Bengal on having set examples which, we trust, will eventually be followed both at home and in the colonies.

INDECENT PUBLICITY AND THE FEEBLE-MINDED.

AT a recent sitting of the Royal Commission on the Care and Control of the Feeble-Minded Dr. Henry Maudsley, who gave evidence, called attention to the need for improvement in the machinery by which action has now to be taken when it is desired to protect the persons and the property of feeble-minded persons. He pointed out with regard to this that in order to prove such a person incapable of taking care of himself and of his affairs an inquiry may have to be instituted, not before a Master in Lunacy only but, when a jury is demanded by the person sought to be controlled, before a Master and a jury. This course entails the employment, almost necessarily, of solicitors and counsel upon both sides and all the great expense of a protracted hearing, with the additional drawback that there is no certainty that the result will be a decision in accordance with the weight of evidence or to the benefit of the alleged feeble-minded person, but, on the contrary, a risk lest a jury consisting of laymen may misunderstand or disregard the testimony of experts under the influence of prejudice and sympathy. They may, in short, be led to a conclusion disastrous to the feeble-minded person by the belief that he is defending himself against an attempt to deprive him of his property and to incarcerate him as a lunatic. The

danger attendant upon a sympathetic verdict of this kind lies in the fact that it leaves the subject of it at the mercy of those surrounding him and may end in the control of his property and of his person by others without the requisite supervision necessary to safeguard them. An example of the influences which may sway juries has occurred recently in the sensational paragraphs which have appeared in many newspapers regarding the alleged improper confinement of a peer by his wife and her relatives and in the unsuccessful attempt to obtain the committal of an editor for contempt of court. Upon this application the court held that even assuming that what had been published might be the subject matter of proceedings then pending it must further be shown that the persons who published it were aware that they were making known a document which was under the protection of impending legislation; and that in the case under consideration there was no evidence to show that those responsible knew that what they inserted in their newspaper had any relevance to topics which would come under future discussion. The subject matter of the publication referred to was alluded to in a brief letter to THE LANCET of March 3rd, p. 627, under the heading "Indecent Publicity: A Repudiation." Reports which had been made by Dr. Robert Jones and Dr. Thomas D. Lister for the benefit of a relative interested in the welfare of the peer mentioned above had come into the hands of a newspaper reporter and had been inserted not only in the newspaper against which the application to commit was made but in others also. The principal reason why the publication was held not to be punishable we have explained, but whether it constituted "contempt of court" or not there can be no question that it is highly inexpedient that matter of this kind should be made generally known when an inquiry held by a jury of laymen is likely to follow. From the point of view of the medical profession such publicity given to opinions obtained from its members for a specific and a private purpose is indecent and detestable. The proper remedy in the particular case under consideration was not that sought to be obtained, and the question whether the printing and disseminating of the reports constituted contempt of court was not raised by the medical men who framed them. There can be no doubt, however, that whatever right with regard to these documents passed to those on whose behalf they were made, there was no intention on behalf of their authors to permit publication to take place as it did. The right to restrain the publication of private letters as literary matter may be cited as a parallel which suggests that medical men may have the power to prevent improper use being made of that which they may commit to paper in the practice of their profession and perhaps some day the extent of that power may be tested. Should this occur those responsible for the unauthorised publication will have no one but themselves to thank for any inconvenience or pecuniary loss which may result from their indiscretion.

A SUGGESTION FOR THE TREATMENT OF THE ATAXY OF TABES DORSALIS.

WE published in our issue of March 10th, p. 704, an interesting and suggestive letter from Mr. W. Stuart-Low under the title of "Statics and Dynamics in the Treatment of Locomotor Ataxia." Since the incoördination and ataxy of patients suffering from tabes dorsalis depend upon interference with the conducting paths for sensory impressions, and especially with those for muscular sense, the idea occurred to Mr. Stuart-Low to try to increase the intensity of the impressions from the muscules. With this end in view he weighted the boots of a man suffering from tabes by putting a certain amount of lead into them and since tabetics in walking bring down the heel to the ground first and wear away the heels of their boots, he applied the lead to the front part of the boots. The manner in which this was done was by inserting a piece of sheet lead to the weight of two or three pounds in the sole between the layers of leather. The results in the two cases described by Mr. Stuart-Low seem to have been very gratifying. The first patient, who was previously unable to walk without the assistance of another person, found that with such a pair of weighted boots he had more control over his feet and legs both when sitting and walking and that he could walk with greater confidence and without any assistance save that of a stick. A second patient, who had undergone various forms of treatment, including Frankel's exercises, without marked benefit, has also been much relieved by wearing boots of the character described. He can now walk with confidence and with less exaggerated movements than formerly. The suggestion would seem to be one worthy of more extended trial, since in a disease of such variable course as tabes it is impossible to draw conclusions except from considerable numbers of cases, but Mr. Stuart-Low's results are certainly noteworthy, and his idea has a rational basis since the purpose of the weighted boots is to increase the tension of the muscles and thus to augment muscular tone and to increase the sensory impressions from the muscles to the central nervous system. The extra work entailed by the increased weight to be lifted would not seem to be a deterrent factor since the muscles of tabetics are, as a rule, well nourished and capable of powerful contractions until late in the disease, although in certain cases, as is well known, local atrophies of groups of muscles occur. In such a case it would probably be wiser not to employ the weighted boots.

THE ACCLIMATISATION OF FRENCH SOLDIERS.

IT is generally supposed that Europeans who can support the vicissitudes of hot climates without serious deterioration of health up to the age of 25 years may then be regarded as acclimatised and consequently able to withstand further residence under the same conditions, but according to the *Statistique Médicale* recently published by the French Colonial Department this would not seem to be the case so far as the French colonies are concerned. The figures given in the following table, which has been compiled from the above-mentioned source, give colour to this theory but as they refer to one year only they cannot be looked upon as conclusive.

European soldiers serving in French colonies during the year 1903.	Average strength 26,550 men.		
	Sick-rate per 1000.	Death-rate per 1,000.	Number of invalids per 1000.
Under 21 years of age	765	1·8	56
„ 25 „ „	1108	14·9	130
„ 30 „ „	1274	18·5	152
Above 30 „ „	1024	19·0	163
Officers	—	20·4	9
Non-commissioned officers ...	—	14·9	150

It might, perhaps, be imagined, says a writer in the *Archives de Médecine et de Pharmacie Militaires*, that in consequence of the weeding-out process in operation all the weak lives would be eliminated during the early years of their service but apparently the longer a soldier continues abroad the more susceptible he becomes to the effects of climate. Doubtless, if the men were not sent out for the first time until they were matured by age the result would be different but there are no data by which this point can be determined. It is concluded, however, by most observers that the progressive deterioration of constitution in the older residents is due to the debilitating influences to

which they were subject while still immature. Commenting upon the diseases which were responsible for this waste of life and health, the same writer deplores the excessive ravages committed by the malaria which "dominates the pathology" of most of the French colonies. In 1903 it caused 8632 admissions to hospital and 134 deaths among the white soldiers and also led to the invaliding to Europe of 1928 of them. Per 1000 of strength these figures give the following rates: admitted, 325; died, 5·4; invalided, 72. The rates per 1000 for the native troops were as follows: admitted, 118; died, 3·7. Another disease of great virulence is described as bilious hæmoglobinuric fever. 112 Europeans suffered from it, with 42 deaths, a mortality equal to 37·5 per cent. on the attacks. Amongst the natives there were 107 cases with 34 deaths. It is worthy of note that the Europeans acquired the disease almost exclusively in Africa, whereas the natives of that continent who remained perfectly immune while at home became victims when transferred to stations in Asia, especially Annam-Tonkin. Typhoid fever caused 125 admissions to hospital and proved fatal in 20·8 per cent. of the cases. It was chiefly prevalent in Martinique where it is said to have increased greatly in severity since the volcanic eruption of 1902. The water-borne theory of infection is in favour with the great majority of the medical officers serving in the French colonies.

TEA AND ALCOHOL.

TEA has undoubtedly its victims as well as alcohol, though we think that it would be absurd to say that the former beverage shares with the latter any serious connexion with crime. Both, of course, may easily be sources of disturbance to health, and immoderate tea-drinking is, in one sense, just as physiologically sinful as drinking an alcoholic beverage to excess. Alcohol is, of course, a more insidious poison than tea and its effects are more drastic and perceptible. Nevertheless, tea may be equally stealthy in disturbing functional equilibrium. As a factor in disease excessive tea-drinking is very often overlooked and it does not occur to many persons that tea may be the source of their trouble. At any rate, when the abuse of tea in such instances gives place to the drinking of it in a rational manner and in moderate quantities the common symptoms of disturbance of the gastric function, such as flatulence and irregular action of the heart, and of the nervous system, such as tremulousness and excitability, disappear. The tea drunkard and the alcohol drunkard are both victims of excess; they abuse these beverages and the results are analogous; they wilfully step from the path of physiological righteousness and the sequel is disease. The word abuse, in fact, sums up the whole question when we look at it temperately and without prejudice. Persons of intemperate views, on the other hand, hold that when a risk of abuse exists it is folly in any circumstances to tolerate use, and so we have amongst us organised movements for the suppression of alcohol, tea, tobacco, sugar, meat, and so forth. Our remarks are prompted by a spirited discussion taking place in a provincial paper which arose out of the defeat by a powerful teetotal movement of a proposal to license a public-house. A medical correspondent expresses some strong views on the subject and, although we think that he is rather inclined to exaggerate the evils due to tea-drinking as a set-off against the views of "the fanatic teetotaler" on the alcohol question, undoubtedly he has some very good evidence on his side supporting his contention that excessive tea-drinking is in a great many instances accountable for disease. If anyone were desirous, he says, of amassing a fortune, no surer plan of rapidly doing so could be suggested than to make up a pill of some innocent material, to advertise its merits, but to make only one stipulation, that the patient while taking this pill should abstain from tea. "The pill would have an enormous sale, it would do a vast amount of good, relieve a great deal of suffering, in fact, prove more beneficial than closing half the public-houses." A medical man has obviously some convincing evidence of the evils of immoderate tea drinking to justify him in making such a strong statement as this. We have often heard of the existence of "tea drunkenness" which was epidemic in its dimensions in the swarming districts of a great industrial town, but we confess to some scepticism as to whether the "tea evil" was anywhere in any sense commensurable with the "alcohol evil." Still, we know that in poor families where the teapot is always on the hob and the worst qualities of the leaves are thoroughly extracted, the imbibition of the poisonous stew being indulged in all day, the effects on the health have many points in common with those arising from the alcohol habit. Such persons are, as a rule, ill-nourished, tea often being taken effectively to stay the pangs of hunger, they are confirmed dyspeptics, gastric ulcer is common amongst them, and their nervous system is seriously affected. Campaigns against the evils wrought by the abuse of a beverage which can be blessed rather than accursed in its effects have our entire sympathy, and we do not allude merely to tea alone.

THE PREVENTION AND EARLY TREATMENT OF SYPHILIS.

THE interesting address delivered before the Harveian Society on Feb. 8th by Mr. Campbell Williams and published in THE LANCET of Feb. 10th, p. 361, recalls the fact that the Committee on Physical Deterioration strongly recommended that a Government inquiry should be made as to the hospital and other provisions for the treatment of venereal diseases, especially syphilis. A few years ago a memorial was addressed to the late Lord Salisbury and after his death to Mr. Balfour, the then Prime Minister, by Colonel Long, M.P., and ladies in London praying for a similar inquiry. These ladies pointed out that their attention had been drawn to the shockingly diseased condition of women and girls admitted into rescue homes; also to the fact that women suffered from diseases which, at first difficult to name, were afterwards found to be syphilitic. While wholly objecting to any re-enactment of the Contagious Diseases Acts they were fully cognisant of the importance of prompt recognition and treatment of these diseases. In the year 1899 Mr. Frederick W. Lowndes, consulting surgeon to the Liverpool Lock Hospital and senior surgeon to the Liverpool police, published a brochure on the "Study and Treatment of Venereal Diseases, especially Syphilis," being a contribution to the *Liverpool Medico-Chirurgical Journal* for January, 1899. He treated his subject in an able manner and deplored the apathy of the general public and committees of hospitals as to the prevention and treatment of syphilis and other venereal diseases. He pathetically described the chequered career of the Liverpool Lock Hospital with which he had been connected as surgeon for 23 years and which, up to the end of the year 1886, contained 25 beds for males and 25 for females, the former of which were always full. From the year 1854 to 1881 a total of 13,163 patients were admitted, of whom 5144 were females. In the year 1887 the hospital was unfortunately required to provide medical wards during the rebuilding of the Liverpool Royal Infirmary, of which it was an adjunct, and was closed to special cases for four years. It was reopened in August, 1891, for the reception of patients but with the enactment that no males should be admitted except on payment of 7*s.* per week, also that females should pay the same amount except those coming from homes for fallen women. The tariff, as might have been expected, had a prohibitory effect and the wards were rarely more than one-quarter full. When the hospital was free of charge males applying for admission had generally to wait some time for

an empty bed. In 1899 the hospital was closed to in-patients and an out-patient department was substituted, becoming now an out-patient department of the Royal Infirmary. It is doing a useful work but the want of beds for serious cases is to be deplored, especially in the matter of innocent married women and others suffering from syphilis accidentally acquired who have no other resort than the lock wards of the workhouse. Mr. Lowndes emphasises the fact that the only lock hospitals in England are found in London, supplying 126 beds; in Manchester, about 20 beds; and in Bristol, 17 beds. He found on his last inquiry that the number of beds available for females in lock wards in the 12 principal London hospitals was only 57, though there used to be set apart for females lock wards containing in all 124 beds in the following hospitals: Guy's, 30; St. Bartholomew's, 50; St. Thomas's, 30; Middlesex, eight; and King's College, six. In nearly all the remaining hospitals he stated that there are no beds for such diseases. With regard to the non-accommodation for such cases in London hospitals, it does not follow that cases are not admitted because there is no special ward attached to a hospital for the cases. There were, for instance, many such cases admitted to St. George's Hospital in recent years and, as a matter of fact, they were generally admitted to the same ward although this ward was not specially retained for them. It is, however, urgently required in the interests of public health that some means should be found for the prevention and the early treatment of syphilis, the ravages of which are so far-reaching, and that provision should be made other than the workhouse hospitals for treating persons suffering from venereal diseases.

LATERAL DEVIATIONS OF THE FINGERS.

IN the *Gazette Médicale du Centre* of Feb. 15th Dr. Dubreuil-Chambardel has published an important paper on a deformity which, though not rare, has received little attention—lateral deviation of the fingers. When the finger is deviated to the radial side the deformity is termed "varus"; when it is deviated to the ulnar side the deformity is termed "valgus." Dr. Dubreuil Chambardel has examined the hands of 2500 persons and in the 5000 hands found the following deviations: thumb, varus four and valgus five; index finger, varus 15 and valgus none; middle finger, varus four and valgus six; ring finger, none; little finger, varus 14 and valgus none. In the majority of cases the deviation affected only the two last phalanges but there were differences according to the finger examined. In the middle finger the last phalanx was solely involved. In the 15 cases of index varus the two last phalanges were affected 12 times and only the last phalanx thrice. In the 14 cases of varus of the little finger the two last phalanges were affected nine times and the last phalanx five times. In the thumb only the last phalanx was affected. The deviations were almost always bilateral, except those of the thumb which were usually unilateral. They were often accompanied by homologous deviations of the corresponding toes. Thus with index varus there was varus of the second toe and with varus of the little finger there was varus of the little toe. In general the deviations of the toes were less marked than those of the fingers. The degree of deviation was determined by measuring the angle formed by the intersection of the axis of the first phalanx with that of the deviated one. The greatest deviation, 130°, was encountered in a case of index varus. The deviations of the middle and little finger were always slight. The deformity of the phalanges was studied in radiographs of index varus and in the skeleton of a hand presenting this condition. Generally there was no deformity of the shaft, no abnormal curve. In some cases, however, the shaft was a little diminished in length and the finger a little shorter than normal, reaching scarcely to the base of the last phalanx of the middle finger. The deformity was essentially one of the articular ends of the phalanges, particularly of the distal end. The external condyles of the distal ends of the first and second phalanges appeared as if atrophied so that they were not in the same horizontal plane as the internal condyles. At the proximal ends of the second and third phalanges there was slight increase of volume of the external portion. The result of these deformities was to produce a sort of subluxation. The joints involved were very mobile. Abnormal lateral movements were possible and the deviation was easily reduced. These lateral movements diminished with age and were not possible after the age of 30 years. Evidently at birth the ligaments and muscles were not much involved but afterwards, as the result of the vicious attitude, secondary retraction of the muscles and ligaments occurred and fixed the bone in an abnormal position. In the neighbourhood of the affected joints subcutaneous bursæ constantly formed as a result of the friction on the adjacent finger or of repeated pressure from external sources. Like other deformities of the fingers, heredity plays an important part in the etiology of lateral deviations. As to the pathogenesis, the deformity appears to be an anatomical variation and of the same nature as other osseous variations, such as those in the condyles of the lower jaw. When the deformity is slight it is of no importance but when marked it may be an obstacle to manual occupations such as sewing and writing. The subcutaneous bursæ may become the seat of a hygroma which may become inflamed and suppurate. Treatment is necessary only when the deformity is marked. The deviations of the middle and little fingers are too slight to require treatment. On the other hand, deviations of the thumb and index finger should be treated as early as possible. Dr. Dubreuil Chambardel recommends that on every second or third day forcible movements of reduction should be made for from 10 to 15 minutes. After about a month complete reduction becomes possible. Then a pewter splint is applied which maintains the finger in good position and is worn for several months.

SOME OBSERVATIONS ON THE PHARMACOLOGY AND DOSAGE OF DRUGS.

IN a paper on Standardisation in the *Pharmaceutical Journal* of Feb. 24th Mr. W. Kirkby raises the question whether it is possible for the principle of standardisation of galenical preparations for alkaloids to be extended until further progress has been made in pharmacology and therapeutics. He points out that the therapeutic application of drugs is very largely based upon clinical experience, which explains the fact that many practitioners continue, and prefer, to use the galenical preparations of opium and nux vomica rather than the solutions of morphine and strychnine. Our knowledge of the chemistry of these drugs suggests a difference between the action of the galenical preparations and that of the pure alkaloids. Thus opium, which should contain 10 per cent. of morphine, may contain as much as 1 per cent. of thebaine, to which no importance is attached in a pharmaceutical assay. But thebaine possesses so different a pharmacological action from morphine that it approximates more nearly to strychnine than to morphine. These remarks apply with even greater force to narcotine, which likewise resembles strychnine in its action and may be present in opium to the extent of from 2 to 10 per cent. In the case of preparations of nux vomica the basis of standardisation is strychnine and no regard is taken to the brucine present which, though less toxic than strychnine, has a much more powerful action in some respects, notably upon the nerve terminations in voluntary muscle. Mr. Kirkby then draws attention to the difficulty which a medical man

experiences in fixing the dose of a drug in any given case. In prescribing the optimum dose of a drug regard must be had to the body-weight of the patient, his habits, emotions, and temperament, his idiosyncrasies, and, Mr. Kirkby might have added, the age, sex, family history, and other factors. Mr. Kirkby shows that the standardisation of drugs furnishes the first constant for the determination of these variables but he does not think that a constant obtained by standardising one constituent of drugs of complex and variable composition—e.g., opium and nux vomica—is of much value in this respect. The scientific physician requires the more complete isolation of active principles, the improvement of their methods of extraction, and the production of galenicals based upon sounder principles.

SNAILS AS FOOD

A DISH of snails is hardly ever seen in this country, although in Spain and in France this mollusc is a fairly common article of food amongst the poor, while it is held in great esteem by the gourmet when it is stewed and garnished with herbs and condiments. The suggestion that the snail should form a cheap article of food in this country has been revived and there is nothing to be said against the proposal from a dietetic point of view, for properly cooked the snail is both nutritious and tasty. If, however, the suggestion were seriously acted upon we fear that the supply in this country would prove to be short of the demand. But doubtless the snail could be cultivated as is the oyster when it was found that it had gained a considerable patronage. The snail has indeed been called "the poor man's oyster," though we do not remember to have seen it eaten raw. We know, however, that it makes an excellent fish sauce and may be used for the same purpose as oyster sauce. Possibly also a few snails in a steak-and-kidney pudding would increase the tastiness of this popular food. Care must be exercised in the choice of the snail for food purposes as it is well known that snails feed on poisonous plants and it is the custom in France to allow a few days to elapse after they have been taken from their feeding ground in order that any poisonous matters may be eliminated. Most of the snails in France used for edible purposes are collected from the vineyards of Burgundy, Champagne, and Lorraine, which, we may be sure, afford a perfectly clean feeding ground for the snail considering the care which is taken to protect the vines from disease. According to analysis very nearly 90 per cent. of the solid matter of the snail is proteid matter available directly for repairing the tissues of the body. Besides this there are about 6 per cent. of fat and 4 per cent. of mineral matter, including phosphates. Compared with the oyster, this would show that the snail contains about 100 per cent. more nutritious substances. The suggestion, therefore, that the snail should be used for food is not merely sentimental.

THE TREATMENT AND PREVENTION OF PULMONARY TUBERCULOSIS.

THE public health department of the St. Pancras borough council has recently issued some leaflets containing valuable and interesting information in reference to the treatment and prevention of pulmonary tuberculosis. Numerous inquiries are constantly being made of medical practitioners as to the institutions into which patients in an advanced stage of the disease can be admitted. It is not always easy to reply to such questions. One of the leaflets contains the names of homes and institutions where patients in various stages of the disease can solicit aid. These institutions are divided according to whether the patients are destitute and unable to obtain any other means of help or are "impecunious" but able to secure the interest of subscribers or guarantors of the various hospitals or are able to contribute some sum towards their support. It also indicates the means by which other patients, who are usually classed as "well-to-do," can obtain information as to "sanatoriums for incipient consumptives." Another of the leaflets refers to the voluntary notification of pulmonary tuberculosis. Instructions are given as to the collection of the sputum for bacteriological examination and also the necessary steps to be adopted in the voluntary notification of the disease are indicated. The significant warning is added, "The patient's assent should be obtained before notifying," thus emphasising the important point that the term "voluntary notification" applies as much to the patient as to the medical practitioner. We are glad also to notice the announcement—"The notification will be treated as confidential and nothing will be done to prejudice the patient's occupation or employment." If notification is to be of service this precaution is absolutely essential. The forms to be filled in by the medical practitioner accompany the leaflet. If the case should prove fatal a notice is sent to those in charge of the patient by the medical officer of health, Dr. J. F. J. Sykes, offering to have the room and the contents of the room previously occupied by the patient disinfected. These suggestions are very complete and those responsible for the issue of the leaflets may be congratulated on having gone into the matter thoroughly. We have on several occasions maintained, however, that more can be done by tuition on the part of the medical practitioner attending the case than by any other means. The St. Pancras borough council materially assists in this duty by sending to practitioners together with the leaflets we have mentioned a pamphlet with the title "How to Prevent Consumption," published by the National Association for the Prevention of Consumption. The distribution of this little publication is likely to prove of considerable value.

THE SECOND INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

THE first International Congress on School Hygiene was held in Nuremberg in 1904[1] and the next congress will meet in London from August 5th to 10th, 1907, with Sir Lauder Brunton as the president. The organising committee meets in the rooms of the Royal Sanitary Institute, Margaret-street, London, W.; Sir Edward Brabrook is the chairman of this committee, Sir Richard Biddulph Martin is the treasurer, and the honorary secretaries are Dr. James Kerr and Mr. E. White Wallis, F.S.S. The organising committee has announced that in order to prepare for the congress the first step to be taken is the formation of a local committee for each particular town or district, which committee should approach the authorities of the Education Department and the Treasury, the leaders of educational movements in town or country, the presidents or chairmen of educational committees, teachers of experience, and medical men in the habit of treating children. These local committees when formed should report forthwith to the London bureau the name and address of the chairmen and secretaries. With regard to the supply of reports and papers for discussion contributions are invited from the representatives of Governments, authorities, societies, or academies, as well as from individuals. It is proposed that besides sectional meetings and lectures there shall be held at least three general discussions and the English committee invites suggestions, to be sent as soon as possible, relative to the subjects under this heading. The subscription for membership (one guinea for the British Empire, five

[1] THE LANCET, April 9th (p. 1011), 16th (pp. 1072 and 1086), and 23rd (p. 1156), 1904.

dollars for America, 20 marks or 25 francs for the continent of Europe) is payable to the English treasurer. For members not resident in England the payment will be best discharged through the national secretaries who will forward it to the general treasurer in London. All communications relating to the school hygiene exhibition, which will be arranged in connexion with the Royal Sanitary Institute, should be directed to the secretary of that institute, Margaret-street, London, W.

THE DRUGGING OF INFANTS.

A CORRESPONDENT draws attention to the following case. A first child, a healthy well-grown boy, was, at the age of five weeks, removed from the care of the monthly nurse and placed in the care of an elderly nurse possessing the very highest recommendations; the infant was bottle-fed. Soon after the arrival of the new nurse the mother noticed that after each bottle the child used to fall into a heavy sleep which was not his usual custom. One evening the nurse before going out prepared the baby's next bottle and left the child in the care of his mother. The mother happened to notice a bottle of white globules in a small cupboard in the nursery, marked "one to be given and if sleep is not produced a second to be given in four hours." The mother took out one of the globules and made a copy of the label and the address. The globule was found to contain white bryony. The druggist selling the globules was interviewed and said that it was a very common drug and that he was often asked for it. During the whole time when this nurse was with the child, about one month, he seemed unable to assimilate his food, suffered from diarrhœa, and decreased in weight. The nurse was at once discharged and although for some three or four weeks there was some difficulty with the baby's digestion he ultimately made a complete recovery and is now a fine healthy boy. Those of our readers who have cases of troublesome diarrhœa in infants under their care may perhaps do well to inquire whether the nurses add anything to the bottle, though it is possible that it would be difficult always to ascertain the truth. Bryony taken internally acts as an irritant and is a drastic purgative. In small doses it has been given to children to stimulate the secretion of the intestinal glands.

FATAL INTESTINAL HÆMORRHAGE IN AMŒBIC DYSENTERY WITH ABSCESS OF THE LIVER.

IN *American Medicine* of Jan. 27th Dr. R. P. Strong, director of the Government Biological Laboratory, Manila, Philippine Islands, has reported four cases of amœbic dysentery with hepatic abscess in which copious and fatal intestinal hæmorrhage occurred. Although in amœbic dysentery the motions often consist almost entirely of blood and mucus the occurrence of intestinal hæmorrhage in such quantity as to prove fatal has been seldom recorded and appears to have received little attention. Sir Patrick Manson in his "Manual of Tropical Diseases" states that whenever in gangrenous dysentery sloughs separate hæmorrhage is possible and collapse may result. Scheube says that occasionally large quantities of pure blood are passed and that even death may result. Professor William Osler remarks that in 12 years seven cases of amœbic dysentery in which hæmorrhage from the bowels occurred were treated in his wards. The following is one of the cases related by Dr. Strong. A man, aged 27 years, came under observation on April 9th, 1904, suffering from chronic amœbic dysentery. He was greatly emaciated. The liver was felt several fingers' breadth below the ribs. The temperature was 100° F. and the leucocytes numbered 15,000. As his general condition was so bad an attempt was made to improve the dysenteric symptoms before operating for hepatic abscess. Quinine enemas and occasional doses of Dover's powder were given. On the following two days the temperature ranged between 100·2° and 103·2°. Three or four stools, which usually contained a large quantity of mucus, were passed daily. On April 12th two were passed, the last at 3 P.M. At 7 P.M. nearly a pint of fresh blood was passed. At 9 A.M. on the following day a smaller hæmorrhage took place. At 12.30 a large amount of dark blood was passed. Between this time and 8 A.M. on the next day there were five small hæmorrhages. No further large hæmorrhages occurred but the motions consisted of almost pure blood. The patient gradually sank and died. At the necropsy the large intestine was found to contain dark reddish fluid partially clotted blood and mucus. It showed extensive ulceration throughout. The ulcers, as a rule, were shallow and undermined. In the cæcum were deeper ulcers, some of which were gangrenous. The lower end of the ileum was also ulcerated. In the liver were six abscesses measuring from five to ten centimetres in diameter. Some of the hepatic veins contained thrombi. In all Dr. Strong's four cases there were large hepatic abscesses. He therefore suggests that they were connected with the intestinal hæmorrhage. As long ago as 1873 Dr. James Finlayson argued that hepatic abscess by interfering mechanically with the portal circulation produced congestion of the colon and favoured the occurrence of hæmorrhage. In the article on Dysentery in the "Medical History of the War of the Rebellion" Woodward states that "hæmorrhage from the bowels is another occasional symptom of liver abscess and sometimes is the immediate cause of death" This fact seems to have escaped the notice of writers on dysentery.

THE TOXIC ACTION OF WEST AFRICAN BOXWOOD.

Professor R. J. Harvey Gibson[1] has made an examination of a wood which is extensively employed in the manufacture of shuttles in Lancashire under the name West African boxwood. This wood has to some extent taken the place of Persian boxwood during the last two or three years on account of its cheapness. But so many cases of illness occurred among the workmen employed in making shuttles that the matter was brought to the notice of Dr. T. M. Legge, Chief Medical Inspector to the Factory Department of the Home Office. The symptoms complained of were headache, sleepiness, running at the nose and eyes, chronic sneezing, giddiness, faintness, weakness, loss of appetite, shortness of breath, and nausea. The patients also exhibited a pale yellowish or greenish colour on the face and body, accompanied by an odour from the breath and skin resembling that of camphor or Turkey rhubarb. After weeks of intermittent illness these symptoms had, in two or three cases, culminated in death. Professor Harvey Gibson undertook the examination of the botanical characters of the wood and was assisted in the chemical and physiological portions of the work by colleagues in the University of Liverpool. These experiments prove that the wood contains an alkaloid which acts as a cardiac poison, inducing a gradual slowing of the heart-beat and diminution of vigour in the contractile tissue of the heart. As these effects are cumulative serious results are produced after long exposure to the influence of the alkaloid. It is suggested that the fine particles of wood falling on the perspiring skin, more especially of the hands, yield the alkaloid in varying quantity, which so becomes absorbed into the circulation. Dr. Legge found that 32 per cent. of the men engaged in working this wood complained of headache lasting from two to four hours, the pain being described as "over the eyes or at the temples." 11 per cent. complained of drowsiness, 14 per cent. of running at the eyes, and about 29 per cent. of running at the nose. The running of eyes

[1] Bio-Chemical Journal, January, 1906, p. 39.

and nose was not accompanied by ulceration but local inflammation of the mucous membrane was observable. The breathing was affected in 35 per cent. of the cases noted. About 10 per cent. complained of nausea and faintness. In most cases two or more symptoms were found in the same individual.

THE MANAGEMENT OF DELIRIUM TREMENS.

MEDICAL practitioners occasionally have to decide upon some immediate method of dealing with a fairly well-to-do patient who is the victim of delirium tremens and consequently is quite beyond ordinary domestic control and restraint. Since at present there are no homes for the necessary detention of such "temporarily insane" persons admission has to be sought for them in large towns either to a local hospital or to the parochial infirmary. The latter institution receives such a patient as an urgent "mental case." The medical man in charge of the patient or a relative informs the relieving officer, the overseer, or the assistant overseer of the position of affairs and thereby makes the official informed responsible for the patient's welfare. The relieving officer proceeds with an infirmary attendant to the delirious person's house and by stratagem or by force removes him into safe custody. In especially difficult cases the police are instructed to aid the relieving officer in this process of removal; any reasonable duress or coercion exercised is regarded as medically justifiable. If a justice of the peace is available it is wise to secure a reception order from him before the patient is admitted, for what is commonly known as "the detention order" really gives authority "to receive, relieve, and detain." The medical superintendent of the parochial infirmary should at once examine the patient upon admission and record the presence of any bruises upon, or injuries to, the body. Any outlay made by the board of guardians in treating a case so admitted will be charged to the patient or his executors and applied for in due course by the parochial collector of accounts.

THE INTERFERING ACTION OF KREATININ ON FEHLING'S TEST FOR DEXTROSE IN URINE.

Dr. Hugh MacLean draws attention in the *Bio-Chemical Journal* for February to certain sources of error in the employment of Fehling's solution for the detection of dextrose in urine. The presence of kreatinin in urine interferes markedly with the results owing partly to its power of preventing small quantities of dextrose from giving a reaction with Fehling's solution and partly to its power of modifying and making the reaction of dextrose when present in larger amount. The direct reduction of the solution by kreatinin is of comparatively little importance unless it is present to an abnormal extent. Since, according to Volt, kreatinin may be present in normal urine to the extent of three milligrammes per cubic centimetre it is obvious that the presence of pathological amounts of sugar might be masked. The amount of dextrose that may be added to a normal urine without reacting with Fehling's solution varies considerably in different individuals and is influenced by variations in diet. In the case of a healthy adult living on a milk diet the addition of 0·6 per cent. gave a slight precipitate with Fehling's solution; with an ordinary mixed diet a larger addition was required. The presence of kreatinin is the cause of the production of an opalescent greenish milky fluid in certain urines some time after boiling in Fehling's solution. As a rule this change colour is due to the kreatinin present modifying the reaction of dextrose when the latter is present in an amount greater than the average for normal urine. Kreatin appears to act in the same way as kreatinin. Dr. MacLean finds that many of the greenish liquids obtained on heating urine with Fehling's solution are due to the influence of sugar. He states that the amount of uric acid in normal urine is more than sufficient to react with Fehling's solution in the absence of kreatinin but in its presence in sufficient quantity no reaction ensues. Dr. MacLean's experiments controvert Pavy's theory that ammonia is the substance which interferes with the detection of small quantities of dextrose in urine.

THE MEDICAL SOCIETY OF LONDON.

THE one hundred and thirty-third anniversary dinner was held at the Whitehall Rooms, Hôtel Métropole, London, on Wednesday, March 14th. Sir Lauder Brunton, F.R.S., the President, was in the chair and about 190 Fellows of the society and guests were present. Amongst the guests were Mr. J. Tweedy, President of the Royal College of Surgeons of England; Dr. Donald MacAlister, President of the General Medical Council; Professor T. Clifford Allbutt, Cambridge; the Director-General of the Royal Navy Medical Service; and Dr. J. Kingston Fowler, Dean of the Faculty of Medicine, University of London. The usual loyal toasts having been proposed by the President, Dr. MacAlister proposed "The Medical Society of London." He referred to the proposed amalgamation of the various medical societies and said that he believed that it would be to the advantage of the profession at large that such a movement should succeed. If the Government required any advice on scientific matters the Royal Society was appealed to. On medical matters, however, there was no such recognised body; the proposed "Royal Society (or Academy) of Medicine" would supply the want. Sir Lauder Brunton then referred to the history of the Medical Society and to the vigour which it had acquired during its life of 133 years. He laid stress on the financial stability of the society and also on the value of the library which is now open from 9 A.M. to 6 P.M. He drew attention to the fact that the Medical Society was an off-shoot of the Royal Society. As the range of medical science increased many societies dealing with the special branches of medicine were formed. He pointed out the advantages and disadvantages of specialism. He then remarked on the value to be obtained by amalgamation of the various medical societies. At present the Medical Society of London was waiting for definite information on the important question of finance before calling the Fellows of the society together to decide upon the question. The toast of "The Guests" was proposed by Mr. John Langton and responded to by the President of the Royal College of Surgeons of England, the Director-General of the Royal Navy Medical Service, and Dr. J. Sillonville. "The Health of the President" was proposed by Sir William Whitla who dwelt on the valuable scientific work accomplished by Sir Lauder Brunton, more especially in reference to pharmacology.

AT a meeting of the National Committee for Great Britain and Ireland of the Fifteenth International Medical Congress, held on March 13th in the rooms of the Medical Society of London, a communication was read from the German National Committee. This communication suggested the formation of an International Bureau which should continue in activity in intervals between the meetings. Another suggestion was that in future the Congress should be held every five years instead of every three. We hope to give the full text of the proposals next week.

A DANCE in aid of the St. George's Hospital Medical School appeal will be held at the Whitehall Rooms, Hôtel Métropole, London, on Wednesday, May 2nd, under the patronage of Princess Christian, Princess Victoria of Schleswig-Holstein, and other ladies well known in society

Tickets, which are strictly limited in number, may be obtained from the patronesses, or from the honorary secretaries, Mrs. G. R. Turner, 41, Half Moon-street, W., and Mrs. H. D. Rolleston, 55, Upper Brook-street, W.

THE Harveian Lecture of the Harveian Society will be delivered by Dr. J. S. Risien Russell at the society's rooms, Titchborne-street, Edgware-road, W., on March 22nd, at 8.30 P.M. The subject is Myelitis.

ON SOME HETEROGENETIC PROCESSES.[1]

BY H. CHARLTON BASTIAN, M.D. LOND., F.R.S.

IT may be known only to some present that over 30 years ago I made a long series of investigations on the origin of life question. I ceased to work at the subject in 1876 for a very long period, not because I was convinced that others were right and I was wrong, but because further attention to that question at that time seemed not compatible with my career as a young physician. When, however, I had served for 30 years at University College I resigned my professorship and my physiciancy at the hospital in order that the freedom from teaching and from hospital work might enable me to devote more time and energy to problems which I had apparently relinquished. If my previous work had not impressed me most powerfully I should certainly not have again taken up a subject which the world generally believed to have been settled in a sense adverse to my views. To do so I knew full well would be for long to court neglect.

My first step was to instruct myself in the art of photomicrography in order not to rely on drawings which might be mistrusted. Though photographs are less readily intelligible their freedom from personal bias is of the greatest importance in reference to these questions. Since, during the last six years, I have been devoting all the time I could spare from professional work—mostly in the evening and the early hours of the night—to one side of the subject commonly spoken of as "spontaneous generation." This subject has two aspects—one known as archebiosis, which has to do with the possible synthesis of living matter from its elements, in fluids. That is not the subject about which I am to speak to-night. Since 1876 I have done no work on this part of the subject till the present year, though I shall have soon to announce very startling results in this direction, seeing that I have obtained living bacteria as well as torulæ from many closed tubes containing ammoniacal saline solutions which have been heated to 150° C. for 20 minutes. Organisms from two of such tubes, however, I now exhibit as an indication of what is to come later.

The other aspect of the question is known as heterogenesis; and by it is meant the birth of simple alien living things from the substance of higher organisms or their germs. This is the subject at which I have been working of late years and concerning which I am to speak to you to-night. Of course, it will only be possible for me to call your attention, with the aid of some lantern slides, to a few of these processes and to discuss them very briefly. A discussion of numerous other instances, with many more details, will be found in my recently published book on "The Nature and Origin of Living Matter." The first subject to which I shall refer is one of great importance for us.

1. *The "de novo" origin of bacteria.*—The question is, Can bacteria be made to appear where previously they were non-existent? And to this query I say, "Yes." It was strongly held by Pasteur that the cells of healthy plants are germless and this view is still generally regarded as true. Bacteriologists cannot obtain evidence of the existence of micro organisms in cells taken from the centre of a healthy potato or turnip, and yet bacteria can be caused to appear in these situations, although adequate precautions are taken against infection. A small new potato is first well washed in water, then it is put into a screw-top bottle containing a 10 per cent. solution of formalin, and allowed to soak therein for 20 minutes, the fluid being occasionally shaken so as to cover the whole internal surface of the bottle. The solution is next poured out, leaving the surface of the potato and the bottle wet with the antiseptic fluid, and the cover is tightly screwed on. When this method was employed there was never the slightest indication of any contamination of the surface of the potato, yet when it had been left for a number of weeks in this closed and aseptic bottle micro-organisms were often found (after careful search) within multitudes of closed cells, in sections taken from central regions of the potato but not from peripheral portions which have been acted upon by the antiseptic fluid. Representations of such organisms may be seen in the photographs which I now show. Here, again, is another instance. Some of the cells of a small and previously healthy turnip are seen to be crowded with bacteria. Yet this tuber, having been first well washed, was suspended in a small bottle containing nearly one ounce of pure formalin and the screw cover having been firmly applied the tuber was left in an atmosphere of formalin vapour for seven weeks at a temperature of 80° F.—absolutely free, therefore, from all chances of external contamination.

In all such cases the micro-organisms seem first to show themselves as motionless specks in the primordial utricle of the closed cells and the specks develop into such bacilli as I have shown. The fact that the first things to appear within the closed cells are mere *motionless germs* suffices of itself to negative the possibility of infection. Mere motionless germs could not infect. Vegetable cells can only be penetrated by adult organisms capable of secreting toxins for killing the cells and a cytase for softening their walls. Infecting bacteria must be endowed also with motility in order to be enabled to penetrate the cell wall which they have previously softened, but the motionless germ would be powerless in each of these directions. The only other possibility apart from heterogenesis to account for the appearance of the bacteria within the closed cells would be the supposition that germs of micro-organisms have been latent within the cells. But of this no proof has ever been given. Bacteriologists fail to find evidence of their existence. The verdict of science has, in fact, been adverse to this supposition.

Let us now take another case and one in which the development of bacteria from ultra-microscopic particles can be watched stage by stage. In cyclops, a little water flea, the abdominal appendages are furnished with a number of spines or setæ, in the interior of which only structureless protoplasm is to be seen, free from granules. If one of these little creatures is placed in a drop of distilled water on a microscope slip and a covering glass is applied it soon dies, and we may examine some one of the larger spines from day to day. If the specimen is kept in a damp chamber and the weather is warm we may see what the photographs I now show reveal. At first we have protoplasm within the spine free from visible particles; then, after two days, the first appearance of some minute motionless specks which gradually increase in number and size till some of them show themselves as motionless bacilli. About the sixth day some of these bacilli begin to exhibit the first signs of movement and soon we have a seething mass of such organisms in the substance of the spine.

How, again, are we to explain these appearances? The spine has a chitinous envelope which could not easily be penetrated by active full grown organisms, much less by motionless germs, even if these existed in the distilled water. Thus infection from without is here again not to be thought of. We see motionless specks appear and slowly develop into motionless bacilli. To assume the pre-existence in the protoplasm of the spine of multitudes of ultra microscopic germs for no other purpose than to stave off a belief in the *de novo* origin of bacteria is surely neither scientific nor permissible. And yet my critics hint only at latent germs without attempting to offer any evidence of their existence or of any previous belief in this direction. Such pre-existing invisible germs are postulated, in fact, without a tittle of evidence and solely, as I have said, with the view of staving off a conclusion otherwise inevitable. Truth-seekers are thus left with a simple choice: either (*a*) a belief in the existence of latent germs independently of all evidence or (*b*) a belief in the *de novo* origin of bacteria on the strength of very cogent evidence.

2. *The transformation of small masses of zoogloea into aggregates of flagellate monads or amœbæ or else into brown fungus germs.*—The evidence for heterogenesis to which I

[1] A demonstration, with aid of lantern slides, given on March 15th at a specially convened meeting held at the rooms of the Medical Society, 11, Chandos-street, London, W.

have just been alluding appeals even more to reason than to observation, but that to which I am now about to refer comes more and more within the scope of actual observation. The changes to be observed in zoogloea are best studied in such masses as form on the surface of a weak filtered hay infusion, whose mode of preparation has been elsewhere described. After detailing the manner in which they appear in the scum that speedily gathers on the surface of the infusion a series of photographs was shown in illustration of the transformations which they exhibit. Masses of zoogloea in their early stage were first seen, in which the constituent bacteria were plainly recognisable. The growth of the masses, their alteration in appearance and in reaction to staining fluids, together with the progressive segmentation which they undergo, were revealed by other specimens. Segmentation was shown to progress till minute spherical or ovoidal units were produced. During the first 3–5 days, while these changes are occurring, the masses remain colourless and the ultimate segmentation units develop into flagellate monads or, more rarely, into equally minute amœbæ, myriads of one or of the other of these forms appearing (all of about the same size) where a few hours before they were absent.

Later, from the fifth to the tenth day, the ultimate segmentation units of other of these masses appear as aggregates of brown fungus germs. Often the masses as a whole become brown before segmentation has much advanced and the different stages were shown by which the bacterial aggregates are completely converted into masses of brown fungus germs, together with the development of hyphæ therefrom. All the stages in the complete conversion of the zoogloea masses into monads or amœbæ, in the one case, or into brown fungus germs, in the other, are clearly recognisable, though it is impossible to say from the appearance of the masses in their early stages which of these three interchangeable forms of life will ultimately be produced.

The notion that infection can account for these changes is, I think, absolutely untenable. All the changes by which the aggregates of bacteria are metamorphosed into monads or amœbæ, or into fungus germs, can be followed step by step in thousands of these little masses of zoogloea lying side by side, when no monads or brown fungus germs are to be seen around and when not a single hypha is to be met with on which such germs could have been formed. What, it may be asked, could be the meaning of the developmental changes and the progressive segmentations unless such processes are the result of an organising tendency destined to have some definite outcome? Why, again, should the zoogloea or its segments so often tend to assume a brown colour, while it is still nothing but zoogloea, if this is not one of the stages of change for the production of brown fungus germs? Chemical changes in the fluid seem to determine whether the products of segmentation are to issue as monads or amœbæ in the early days of the life of the scum; while other chemical changes occurring rather later lead the zoogloea masses to assume a brown colour and cause them to go on to the production of brown fungus germs. These changes can fortunately be observed by others with the greatest ease and if carefully studied would, I feel assured, soon bring conviction even to the most sceptical investigator.

3. *The origin of different ciliated infusoria from the eggs of a rotifer.*—I now pass to other transformations still more remarkable and still more impossible of receiving any explanation as results of infection on account of the size of the masses of living matter the stages of whose change can be traced. The products in this case appear as ciliated infusoria of one or other kind according as the egg undergoes transformation as a whole or only after it has segmented into a number of smaller masses. The egg or gemma that in certain cases can be made to undergo these changes is that of Hydatina, the largest of the rotifers. It constitutes a mass of granular protoplasm averaging about $\frac{1}{10}$ inch in diameter. After a long series of investigations with these eggs I found that certain batches of them if placed *soon after they had been laid* in small, covered stone pots full of water would in part yield hydatinæ and in part a great embryo ciliate belonging to the genus Otostoma. The ordinary development of hydatina takes place very rapidly and when the eggs have once started along this normal line of development it continues notwithstanding this or other great change to which they are subjected. It is the eggs that have only just been laid which are at times, but not in all cases, metamorphosed by being put in the absolutely dark and comparatively airless pots. The changes that occur under these conditions were illustrated by a series of photographs showing first the normal egg and the young hydatina that should come from it, and then the stages by which the whole of the egg mass is transformed into a great ciliated infusorium which ultimately begins to revolve, before bursting through its egg-case. The organism has a small ear-like mouth which is the principal character showing it to belong to the genus otostoma.

As regards the reality of this transformation, doubt seems impossible for the following reasons. The ciliate is an extremely rare one and up to the time of my having made the foregoing observations I had never once met with it in association with euglenæ and hydatinæ, though during the course of these investigations I had taken hundreds of such ciliates from my experimental pots. In batches of from 30 to 40 hydatina eggs placed in the pots I have several times found at the expiration of three or four days from 15 to 25 per cent. of the egg-cases occupied by a great ciliate instead of by a hydatina, while when similar batches of eggs were placed in an open watch-glass exposed to light not a single one of these ciliates would appear. There are only two possibilities of error, each of which may be easily dismissed. There is first the doubt that ever recurs—viz., the possibility of infection. But germs of ciliates are unknown to science; and even if germs of otostoma did exist and one of them was in the habit of getting into the rotifer's egg it would have to devour absolutely the whole of the contents of the egg since, as we have seen, the ciliate, on emerging, leaves nothing but the egg-case. During such a process any growing and developing ciliate could by no possibility hide itself; but, as a matter of fact, no movement is ever seen within the egg till the whole mass begins slowly to revolve anterior to its emergence as a ciliate. The doctrine of infection, therefore, utterly breaks down.

The only other possibility of error is this—that what I have been taking for eggs of hydatina have in reality been encysted otostomata. That is, to say the least, not likely; and, like the last attempted interpretation, this also assumes the frequent co-existence of these organisms with hydatinæ, whereas they are only to be met with on extremely rare occasions. Twice only have such organisms been found by me leading a free life in association with hydatinæ, and only one "find" of these organisms in this country is cited in Saville Kent's "Manual of the Infusoria." Up to the time of my making the foregoing observations I had never met with them in a free state, so that they had never been found in sites in which for a period of eight or nine months and previously I had been obtaining my supplies of hydatinæ. When, subsequently, they were were found in the free state I realised that the organisms which were produced from the hydatina eggs (notwithstanding their great size) were only embryos, which in their mature state were capable of attaining a bulk three or four times as great. A small specimen of these free-living otostomata may now be shown, in which the characteristic mouth and great nucleus are discernible; while two other slides reveal such organisms in their encysted condition, and show the impossibility of confusing these larger and totally different objects with the eggs of hydatina. Neither possible source of error can, therefore, be admitted, and we must perforce acknowledge that the otostomata have been derived from the eggs of the rotifer, and by such stages as are shown in the photographs.

At other times, in the dark pots the contents of the egg are found to have divided into 12–20 smaller spherical masses, such as are now shown. These become individualised and transformed into embryo ciliates, sometimes belonging to the genus Oxytricha and at others to that of Vorticella. So long ago as the spring of 1872 I first saw this transformation into oxytrichæ, when many of the embryos were seen revolving within their own special cysts, while still inclosed within the unbroken egg-case of hydatina. A note then made says[2]: "Some of this batch of rotifer's eggs were seen to be filled with such spherical masses, whilst others were observed in which a few of the embryos had escaped from their cysts and were swimming about as well-marked specimens of oxytricha within the thin investing membrane of the rotifer egg." On two other occasions of late years, and each time in the spring, I have seen this transformation into a brood of young oxytrichæ, while on another occasion the little spheres into which the egg substance had divided were all transformed into embryo vorticellæ. One of these latter eggs is now shown containing

[2] The Beginnings of Life, vol. ii., p. 489.

about 20 spherical masses, in which the egg-case is still intact, and also another damaged specimen which was found close to it. All the stages in the development of the contained embryos were traced, till they produced such young vorticellæ as are now shown among the empty egg-cases of the hydatina. The occurrence of infection is here again an impossible one. Germs of these ciliates are unknown, and no moving thing is ever seen within these intact egg-cases of hydatina till the little embryos become roused into active life, each within its own special cyst.

We have here, therefore, facts of an astounding nature, seeing that no sort of kinship is known to exist between the comparatively complex rotifers and the unicellular organisms into which their eggs are transformed; and seeing, further, that totally different forms of ciliated infusoria are produced from the egg substance of the hydatina, according as it becomes transformed as a whole or only after having undergone segmentation into a varying number of small spherical masses.

These latter facts cannot but recall the varying product—which, as I have shown, are also yielded by apparently similar masses of zoogloea; and such facts, together with the many other similar heterogenetic transformations which I have traced, and elsewhere described, compel me to believe that the forms of these lowest living things are as much the natural outcome of the polarities of their molecules—the "physiological units" of Spencer—as the varying forms of crystals are the necessary results of their intrinsic polarities under the conditions in which they are formed.

We know that these lower living things are most mutable and sensitive to changes in their medium, yet the accredited biological doctrines of the day ask us to believe, on the one hand, that all the forms of life that have ever lived have been derived from primordial forms which were first evolved untold ages ago upon the cooling surface of our planet; and, on the other hand, we are asked to believe that bacteria, monads, amœbæ, ciliated infusoria, and multitudes of other lowest forms of life which are found to teem in all kinds of situations at the present day have resisted change and have been perpetuating their like during æons and æons of time. I must confess that this seems to me nothing less than an absurdity. Logic and the uniformity of natural phenomena would seem to negative the idea of an isolated and therefore miraculous origin of life. If archebiosis, or at all events processes of heterogenesis, such as I have been describing, occur now and have been ever recurring we get an explanation of the continued existence at the present day of the lowest forms of life all over the surface of the earth, the reason for which would otherwise be absolutely unintelligible from the point of view of the doctrine of evolution.

At this late hour I can only hint at the importance of these views for medical science. Recognition of the *de novo* origin of bacteria does not tend to contradict any of the great body of bacteriological doctrine which has been built up during the last 30 years. It only tends to open the door rather wider and to put a reasonable check upon ultra-contagionist doctrines. There are indications, indeed, that the more philosophic bacteriologists are beginning to recognise the need of more moderation in this direction when we find Lehmann and Neumann, for instance, saying in their "Principles of Bacteriology,"[3] "The division of bacteria into pathogenic and non-pathogenic, etc., as is still always done in text-books, has failed absolutely. We can understand and know the pathogenic varieties only if we study simultaneously the non-pathogenic, from which the former have once originated and still always originate." How much more, then, will it come to be recognised when the *de novo* origin of bacteria is generally admitted that we have to think of the origins of contagious diseases in the present day, instead of postulating the occurrence of such origins as possible only in a "remote geological past" about which we know nothing.

[3] Translation of second edition, 1901, pp. 116–119.

HEALTH OF ILFRACOMBE.—Dr. E. J. Slade-King, medical officer of health of Ilfracombe, in his annual report for 1905 states that the death-rate was 11·5 per 1000 and this was the average from 1901 to 1904. The birth-rate was 17·3 per 1000. The infantile mortality was 84·9 per 1000. Dr. Slade-King describes the water-supply as constant and ample.

A NEW MICROBE, PATHOGENIC FOR RODENTS, BACILLUS EQUI.

BY E. KLEIN, M.D., F.R.S.

Mr. Charles J. Humphrey, M.R.C.V.S., veterinary inspector, submitted to me a sample of blood of a horse that had suddenly died from an unknown cause. Mr. Humphrey had examined the blood of the animal with a possible view of detecting bacillus anthracis, but he failed to do so. Being anxious to have the diagnosis confirmed or negatived in order to have the required administrative regulations carried out he asked me to examine the above sample of blood. The animal—a private carriage horse—had been in the owner's possession for two and a half years and had not been laid up ill during that period. The horse was at work in the afternoon, returning to the stable at 5 P.M., and died at 7.45 P.M. the same evening.

The following were the chief symptoms at the post-mortem examination made by Mr. Humphrey. There was blood about both nostrils and the abdomen was swollen; the mesentery was inflamed in patches, with blood extravasations; there were inflammatory patches along the large bowels, the vessels were congested with extravasations, the mesenteric blood-vessels were engorged, and the lungs were congested. My best thanks are due to Mr. Humphrey for supplying me with the preceding notes. Film specimens of the blood showed a great many small and large groups of bacilli; in these groups there were some not larger than a coccus, others long cylindrical, and all intermediary forms. From this it was therefore evident that Mr. Humphrey's preliminary diagnosis, "Not anthrax," was correct. I injected subcutaneously in the groin of a guinea-pig (1) with a fair dose of the blood—about 0·1 cubic centimetre. This guinea-pig developed a soft swelling in the groin and on the abdomen of the injected side but on the fourth day seemed quite lively. The animal was killed and on post-mortem examination showed about the seat of injection gelatinous infiltrations from which a large amount of turbid sanguineous fluid oozed out. Under the microscope the fluid, besides containing blood corpuscles, was crowded with short bacilli, some free, others in groups, some almost spherical, like cocci, others longer or shorter cylindrical; they were non-motile; gram negative. Cultures: surface agar plate, agar tube, and gelatin tube proved that the fluid contained one species only of microbes, non-motile, gram negative, from 0·8 to several micromillimetres in length, in shape of all forms intermediate between coccus-like and cylindrical up to several μ. It was therefore quite clear that this result negatived anthrax. All the viscera of the above guinea-pig appeared to be normal. With a single colony from the above agar plate injected subcutaneously in the groin one further guinea pig (2). Next day this animal showed a soft slight swelling about the seat of injection. After another day the swelling had slightly increased, but the animal seemed quiet and off food. Four days after the injection it was in a dying condition. The post-mortem examination showed the following appearances: locally there was slight œdema and congestion; the spleen was enlarged and dark; on the parietal pericardium and the mediastinal pleura there were purulent pseudo-membranes; the lungs were much congested. Films and specimens of the pseudo-membranes showed, besides the leucocytes constituting the pseudo-membrane, crowds of the bacilli, many intracellular, others free. In shape, size, and staining they were of the same characters as those used for the injection. Cultures made of a trace of the pseudo-membrane yielded pure cultures of the same species. Film specimens and cultures of the spleen showed great abundance of the same microbes. The heart's blood contained the microbe but not less in numbers, platinum loop of the blood yielding an almost confluent mass of colonies. With a single colony from an agar plate of the heart's blood of this guinea-pig injected subcutaneously one large rabbit. The animal died four days after; it had local inflammation, thin pseudo-membranes on the liver and an enlarged spleen, pseudo-membranes on the mediastinal pleura and the pseudo-membranes of the liver, the spleen, and the pleura showed in film specimens and culture abundance of the bacilli; a similar result was obtained with tissue of the spleen; the heart's blood also contained great abundance of the bacilli.

From these experiments it follows that the original blood

of the horse contained abundance of a microbe which proved pathogenic and fatal to the guinea-pig and through this to the rabbit, the microbe in small doses (a single colony) causing death in four days with pseudo-membranes on the viscera, with abundance of the same microbe in the pseudo-membranes, the heart's blood, and the spleen. The microbe, for which I propose the term "bacillus equi" resembles in shape and size the bacillus pseudo-tuberculosis (A. Pfeiffer), possessing all intermediate shapes between a coccus and a cylindrical, almost filamentous bacillus and being non-motile and not liquefying gelatin, but in action it obviously differs from it, the former causing acute illness and not producing the well-known necrotic nodules in the spleen, the liver, the lung, and the lymph glands characterising the action of the bacillus pseudo-tuberculosis. The bacillus equi grows well at 37° C. and at from 20° to 21° C. it forms round, more or less flat, moist, translucent colonies both on agar and on gelatin; it grows slower and is distinctly more translucent than bacillus pseudo-tuberculosis. The bacillus equi is practically gram negative; the oval forms, both of culture and of the animal tissues, show bipolar staining with methylene blue. The bacillus equi does not alter neutral red broth, litmus milk, lactosepeptone, or litmus glucose bile salts (MacConkey fluid). In alkaline beef broth it forms slight but uniform turbidity; no pellicle. Bacillus pseudo-tuberculosis leaves the fluid fairly clear but forms copiously granules and flocculi with pellicle on the surface (where the fluid touches the glass). The bacillus equi does not form spores and is devitalised by complete drying. Dr. Mervyn H. Gordon has kindly subjected in comparative series both the bacillus equi and the bacillus pseudo-tuberculosis to the various sugar tests and he finds as the chief and constant differences that while bacillus pseudo-tuberculosis forms acid from maltose and not from saccharose the bacillus equi behaves in a contrary way, inasmuch as it forms acid from saccharose but not from maltose.

As already mentioned, the action of the bacillus pseudo-tuberculosis and of the bacillus equi is fundamentally different. As a further distinction may be mentioned the fact that while bacillus pseudo-tuberculosis retains its pathogenic action unimpaired in subcultures after many months' transference the bacillus equi rapidly loses its virulence in subcultures. The microbe of fowl cholera, with which the bacillus equi has certain morphological and cultural characters (including indol formation in broth) in common, differs from our microbe in (*a*) the bacillus of fowl cholera is virulent for mice and non-virulent for guinea-pigs, the bacillus equi is virulent for the guinea-pig and non-pathogenic for mice; and (*b*) the bacillus of fowl cholera curdles milk and reduces litmus and the bacillus equi does neither, milk remains fluid and litmus remains uncharged.

St. Bartholomew's Hospital.

CRIER AND WIFE *v.* HOPE AND CURRIE.

(*Specially reported for* THE LANCET.)

IN the King's Bench Division on March 2nd, 5th, 6th, 7th, and 8th, before Mr. Justice A. T. LAWRENCE and a special jury, Mr. William Fletcher Crier, an estate agent residing at Greenford, near Ealing, and his wife, Mrs. Mary Crier, sued Mr. George Hope and Dr. George Burnett Currie, partners, practising in Ealing and neighbourhood, for damages, alleging that by reason of the latter defendant's negligence Mrs. Crier had become infected with scarlet fever during her confinement. Mr. GILL, K.C., and Mr. A. FARLEIGH represented the plaintiffs; Mr. MCCALL, K.C., and Mr. NEILSON appeared for the defendants, who denied the charge of negligence.

In opening the case Mr. GILL stated that the plaintiffs were married early in 1903 and went to Greenford in 1904. The husband engaged Dr. Currie to attend his wife in her second confinement, which took place on Nov. 15th, 1904. No complications took place until Nov. 18th, when the patient's temperature began to rise, eventually reaching 105° F. On the following day a scarlet rash appeared on the body in addition to a sore-throat and on Nov. 20th Dr. Currie pronounced Mrs. Crier to be suffering from scarlet fever. Her condition for a time was very critical. Dr. Currie said that neither he nor his partner had any fever patients in their practice and therefore he could not account for the origin of the infection. This statement was untrue. Though there was no suggestion of lack of skill on Dr. Currie's part he (counsel) maintained that if a medical man attended an infectious case and then went to a confinement he did so at his own risk.

The first witness called was Miss SUSAN BROWN, a certificated nurse, who attended Mrs. Crier in 1903 for her first confinement and also in November, 1904. The witness stated that the latter confinement was normal save for a slight rupture of the perineum which required one stitch. The defendant, Dr. Currie, washed his hands in water, then corrosive sublimate, and lastly in lysol prior to examining the patient. He also removed his coat and was supplied with an apron. He used a nail-brush. "White leg" was a complication. Mrs. Crier had suffered for some time previously from varicose veins. On Christmas Day Mrs. Crier's condition had so much improved that she was allowed up, but the next day she had a relapse which was followed by three rigors on Dec 30th, Jan. 6th, and Jan. 11th. On Jan. 13th Dr. G. E. Herman was called in and opened a pelvic abscess, recovery following, though nurses were in attendance until April. The witness stated that she asked Dr. Currie in November as to the source of the infection and that he had replied, "I have not had a fever case for some time."

Mr. CRIER stated that on his arrival Dr. Currie removed his overcoat and muffler. After scarlet fever had been diagnosed Dr. Currie stated he "was not attending any fever cases" and was at a loss to account for it. Mrs. Crier's illness was notified on Nov. 21st and on the following day Mr. Hope, the medical officer of health, called and made inquiries of the witness. Dr. Currie's statement was repeated to his partner who expressed the opinion that he (Dr. Currie) could not have properly understood the query for he (Dr. Currie) was attending infectious cases. This interview was recounted to Dr. Currie who remarked, "He is a funny chap; you may take it from me that I have not had any." The witness stated that he had had inquiries made, with the result that he learnt that Dr. Currie had certified patients as suffering from scarlet fever on Oct. 15th and 17th, and Nov. 14th and 15th. When confronted with this evidence Dr. Currie is alleged to have observed, "What is a doctor to do?" The plaintiff stated that his claim for special damage amounted to £500, incurred by out-of-pocket expenses and loss of business, the latter being brought about by his constant and necessary attendance at home.

Cross-examined, he stated that he kept three servants, procured his goods from Harrod's Stores, and his milk from a neighbouring farm. He went to business at Chiswick partly by train and electric tram.

Mrs. MARY CRIER said that she was a nurse for five years prior to her marriage. Directly Dr. Currie came into her room on Nov. 15th, some time about 7 or 8 P.M., he shook her hands prior to washing his own. He told her that he had no fever cases on her inquiring as to the source of her infection. After her first confinement in 1903 she had been in indifferent health.

Mrs. ELIZABETH MILLER, a labourer's wife, stated that Dr. Currie visited her two children who were suffering from scarlet fever on Nov. 15th, about 6 P.M.

Dr. CHARLES ERNEST GODDARD, medical officer of health of Wembley, and Mr HERBERT EDWARD COUNSELL, of Oxford, gave evidence and deemed it unwise for medical men to attend cases of confinement within so short a period as Dr. Currie had done after visiting a scarlet fever case, "even after taking proper precautions." It was a risk that members of the profession should not run except in the greatest emergency. The latter witness thought the septic trouble which culminated in the pelvic abscess to be due to the scarlet fever infection.

Mr. MCCALL, in outlining the defendants' case, remarked upon the amount of prejudice that had been introduced into the case. The only questions for the jury to consider were: (1) Did Dr. Currie convey infection to Mrs. Crier? and (2) Did he as a medical man in the circumstances exercise reasonable care?

In his evidence Dr. CURRIE stated that he visited the Millers' house on Nov. 15th but had no necessity to touch the boy, having diagnosed his condition on the previous day. Returning home he found a telegram summoning him to Greenford. Thereupon he washed and disinfected his hands and arms with lysol and changed his coat prior to driving the two and a half miles to Greenford. Before examining Mrs. Crier he had thoroughly disinfected himself as stated by Nurse Brown. He also used rubber sleeves to cover his shirt.

These had been sterilised previously by boiling. He denied the statements he was alleged to have made to Mr. and Mrs. Crier and Miss Brown. What he said to the husband was, "At present I am not attending any case nor do I know of one in Hanwell." He diagnosed the "white-leg" complication on Nov. 29th. He did not consider it was brought on by sepsis as stated by the plaintiffs' medical witnesses. He considered the patient's relapse after Christmas to be wholly distinct from the scarlet fever—only a local disturbance. He thought it practically unnecessary to request another medical man to take the confinement case for him. Between Nov. 15th and Feb 3rd he had attended 32 confinements and had paid 311 ordinary visits. None of these had developed scarlet fever.

Cross-examined, Dr. CURRIE said he had told Mr. Crier the truth—though perhaps not the whole truth. He would call it an equivocation. In November he and Mr. Hope were not on speaking terms, both being desirous of dissolving the partnership. The medical profession drew a distinction between "attending" and "seeing" a patient, but the witness admitted that there was no difference in the risk. The septicæmia which Mrs. Crier suffered from was not puerperal.

Dr. HERMAN thought that Dr. Currie had taken all the precautions necessary. He did not consider the pelvic abscess which he opened on Jan. 18th, 1905, was due to the scarlet fever infection. Neither did he agree with Dr. Galabin's dictum that parturient women were more liable to become infected by the fever. The septicæmia was not of the puerperal variety.

Dr. WILLIAM HUNTER, physician to the London Fever Hospital, agreed generally with the evidence given by the last witness. In his opinion medical men did not carry infection. He admitted the possibility of the connexion between the scarlet fever in November and the later trouble in January.

Cross-examined he said that changing clothes and the taking of a bath were reasonable precautions but thorough disinfection was the essential factor.

Mr. LEWIS DRANSFIELD BROWN, visiting physician to the Ealing Isolation Hospital, considered the precautions taken by Dr. Currie to be reasonable.

Professor HERBERT R. SPENCER, obstetric physician to the University College Hospital, considered the precautions taken by Dr. Currie effective. He agreed with the suggestion that there might be sometimes a connexion between "white leg" and scarlet fever, but in the present case the predisposition possessed by the patient to varicose veins would probably exclude scarlet fever as being the cause of the "white leg."

Dr. WALTER SMITH considered the precautions taken sufficient. He stated that if a medical man thought there was the slightest risk to his patient he ought to get another medical man to go to the confinement. He offered the opinion that pork was a frequent carrier of scarlet fever.

The learned JUDGE, in the course of his summing up, said that the public were not entitled to expect more than ordinary and reasonable care from a medical man. An exceptional standard of skill could not be required. The questions for the jury's decision were those put to them by the defendants' counsel. In his opinion it was very much akin to "straining at a gnat," to lay it down as a rule that a medical man, aware that he had been engaged for a confinement—the date of which was by no means certain—should refrain from visiting other patients. As regards the conveyance of infection Mr. Gill had treated it as a certainty, but from the evidence given on both sides the only certain fact seemed to be that one person could convey it to another. It was quite possible in the present case that the patient might have derived the infection from other sources than from the medical man, for it had been stated that an epidemic was at the time "raging in the neighbourhood." Besides, the mere fact that they (the jury) thought Dr. Carrie communicated the infection was not sufficient in itself to make them come to the conclusion that he had not taken due care. He failed to see any reason for a medical man to inform a husband of his attendance upon an infectious case prior to attending the wife, for in his (the medical man's) opinion he had taken steps to render himself free from the risk of carrying infection. To his (the judge's) mind to go and tell the patient or friends was displaying a lack of self-respect and courage. Neither did he consider it an act of negligence for a medical man not to call in another practitioner. Dealing with the contention that Dr. Currie should have completely changed his clothes the judge opined that it was very impracticable, supposing an epidemic was prevailing. The alleged conversations were important if they went to show that Dr. Currie was conscious that he had been less careful than he ought to have been and was therefore less candid to Mr. Crier about the scarlet fever cases which he had attended. Continuing, his lordship said that all the evidence given by the witnesses went to show that lying-in women were not more liable than others to scarlet fever infection. This had a strong bearing on the subject of proper precautions if the defendant adopted this view in taking precautions before going to a confinement. His lordship said that contrary views had been cited from text-books, written by living authors, on behalf of the plaintiffs but such opinions were not evidence.

The jury found a general verdict to the effect that "Dr. Currie had taken the usual precautions."

Mr. GILL asked his lordship to request the jury to answer the question as to whether Dr. Currie had not committed a legal assault upon Mrs. Crier on or about Nov. 20th, 1904, by examining her after leading her to believe he was not attending any scarlet fever patients.

After some deliberation the jury intimated their inability to agree and were dischared.

Mr. MCCALL: I ask for judgment for the defendants.

HIS LORDSHIP: Yes.

Mr. FARLEIGH: Is your lordship going to separate the claims, the jury having disagreed upon one part?

HIS LORDSHIP: On reflection I do not think I ought to have allowed the second question to go to the jury. A stay of execution with view to an appeal will be granted on the usual terms.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 15th, 1828.

FOREIGN DEPARTMENT.

*MM. BRESCHET and RASPAIL have lately been engaged in investigating the structure of the nerves, with a view to ascertain whether there were canals, according to the opinions of the late M. Bogros, permeating their centre or not? The conclusion at which these anatomists have arrived is, that there are no canals in the centre of the nerves, and consequently that it is not by virtue of any fluid contained in them that the powers of sensation and voluntary motion are performed. In all the cases where the attempt was made to inject mercury into the nerve, this fluid either escaped between the loose cellular membrane and the neurilema, or the neurilema and the nerves; and in no instance continuously through the centre of the nerve.

AS JOE BURNS was bustling through the streets one day this week, he was overtaken by an old colleague, who, after the usual friendly salutation, complimented him on his late success in joke and pun. "Mere trifles, Sir," said JOE, "struck off at the moment; cost me no trouble; not worthy of your attention." It was soon apparent that the friend was quizzing, and that he did not believe JOE to be the real author of the good things that pass under his name. The latter was nettled at this; for, though very good natured, and affecting indifference on the point, he is extremely sensitive whenever his reputation as a wit is called in question. "Well," said the friend, "you may easily settle the point; make a joke directly; if it be good, I will give up my doubts, and the effort shall not be lost." JOE took him at his word, and said with incredible promptitude, "Tell me, Sir, why Ben Travers is like the 'glorious orb of day.'" This apparently incongruous comparison of the source of light to the great master of the dark style, completely puzzled the doubter; the more he reflected on the unfathomable depths of this profound author, the less was he able to discover in him the likeness of anything luminous, and he soon gave up the attempt. "Why," said JOE, with a look of exultation over the confounded sceptic, "did not Ben rise in the east, and has he not gone down in the west?"

* Repertoire d'Anatomie, tom. iv., p. 4.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8849 births and 5076 deaths were registered during the week ending March 10th. The annual rate of mortality in these towns, which had been 17·2, 17·3, and 17·4 per 1000 in the three preceding weeks, declined again to 16·7 per 1000 last week. In London the death-rate was 16·2 per 1000, while it averaged 17·0 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·0 in Barrow-in-Furness, 9·6 in Hornsey, 9·7 in Croydon, 10·7 in West Hartlepool, 10·9 in Ipswich, 11·3 in Willesden, 11·4 in Handsworth (Staffs.), and 11·5 in King's Norton; the highest rates were 21·1 in Newport (Mon.), 21·3 in Bootle, 21·6 in Merthyr Tydfil, 22·0 in Brighton and in Preston, 22·6 in Liverpool, 24·1 in Warrington, and 29·9 in Tynemouth. The 5076 deaths in these towns last week included 469 which were referred to the principal infectious diseases, against 446, 388, and 420 in the three preceding weeks; of these 469 deaths 156 resulted from measles, 134 from whooping-cough, 60 from diphtheria, 51 from diarrhœa, 43 from scarlet fever, and 25 from "fever" (principally enteric), but not any from small-pox. No deaths from any of these principal infectious diseases were registered last week in Hastings, Burton-on-Trent, Walsall, Birkenhead, Warrington, Rochdale, Burnley, or Rotherham, while they caused the highest death-rates in Tottenham, East Ham, Southampton, Plymouth, Derby, Liverpool, Middlesbrough, and Newcastle-upon-Tyne. The greatest proportional mortality from measles occurred in Tottenham, Leyton, Walthamstow, Plymouth, Liverpool, Bury, Preston, Leeds, Newcastle-on-Tyne, and Swansea; from scarlet fever in Wolverhampton and West Hartlepool; from whooping-cough in Southampton, Reading, Plymouth, Handsworth (Staffs.), Birmingham, King's Norton, Leicester, Gateshead, and Newcastle-on-Tyne; from "fever" in Wigan; and from diarrhœa in Barrow-in-Furness, Middlesbrough, and Newport (Mon.). The mortality from diphtheria showed no marked excess in any of the large towns and no fatal case of small-pox was registered during the week. The number of small-pox patients in the Metropolitan Asylums Hospitals, which had been two, five, and six at the end of the three preceding weeks, was again six at the end of last week; one new case was admitted during the week, against two, three, and one in the three preceding weeks. The number of scarlet fever cases under treatment in these hospitals and in the London Fever Hospital was 2545 on Saturday, March 10th, against 2734, 2689, and 2628 on the three preceding Saturdays; 268 new cases were admitted during the week, against 281, 274, and 273 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 289, 328, and 343 in the three preceding weeks, declined again to 314 last week, and were 100 below the corrected average number in the corresponding periods of the four preceding years. The causes of 67, or 1·3 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Nottingham, Salford, Leeds, Hull, and 44 other smaller towns, while the largest proportions of uncertified deaths were registered in Hanley, Burton-on-Trent, Birmingham, Grimsby, Liverpool, St. Helens, Manchester, Blackburn, Preston, Sheffield, Sunderland, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 18·0, 19·6, and 19·3 per 1000 in the three preceding weeks, further declined to 18·2 per 1000 during the week ending March 10th, but was 1·5 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 13·8 in Paisley and 14·9 in Aberdeen to 22·7 in Perth and 22·8 in Dundee. The 622 deaths in these towns last week included 23 which were referred to measles, 11 to diphtheria, ten to whooping-cough, seven to diarrhœa, four to "fever," and two to scarlet fever. In all, 57 deaths resulted from these principal infectious diseases last week, against 64, 54, and 61 in the three preceding weeks. These 57 deaths were equal to an annual rate of 1·7 per 1000, which was slightly above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been 34, 28, and 26 in the three preceding weeks, further declined to 23 last week, and included ten in Glasgow, six in Edinburgh, four in Paisley, and two in Dundee. The deaths from diphtheria, which had been nine, two, and six in the three preceding weeks, further rose last week to 11, of which seven occurred in Glasgow. The fatal cases of whooping-cough, which had been ten in each of the two preceding weeks, were again ten last week and included seven in Glasgow and two in Dundee. The deaths from diarrhœa, which had been ten, five, and 14 in the three preceding weeks, declined again last week to seven, of which four occurred in Glasgow and two in Dundee. The fatal cases of "fever," which had been six and three in the two preceding weeks, rose again to four last week and included two in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 134, 125, and 153 in the three preceding weeks, declined again to 125 last week, and were 28 below the number in the corresponding period of last year. The causes of 17, or nearly 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 19·0, 24·4, and 24·8 per 1000 in the three preceding weeks, declined again to 24·6 per 1000 during the week ending March 10th. During the past four weeks the death-rate has averaged 23·2 per 1000, the rates during the same period being 16·8 in London and 16·6 in Edinburgh. The 179 deaths of persons belonging to Dublin registered during the week under notice were slightly fewer than the number in the preceding week and included six which were referred to the principal infectious diseases, against six in each of the two preceding weeks; of these, three resulted from diarrhœa, two from diphtheria, and one from whooping-cough, but not any from small-pox, measles, scarlet fever, or "fever." These six deaths were equal to an annual rate of 0·8 per 1000, the death-rates last week from the principal infectious diseases being 1·5 in London and 1·4 in Edinburgh. The 179 deaths in Dublin last week included 25 of children under one year of age and 58 of persons aged 60 years and upwards; the deaths both of infants and of elderly persons were slightly in excess of the respective numbers recorded in the preceding week. One death from violence and two inquest cases were registered; and 78, or more than two-fifths, of the deaths occurred in public institutions. The causes of six, or more than 3 per cent., of the deaths registered in Dublin last week were not certified.

VITAL STATISTICS OF LONDON DURING FEBRUARY, 1906.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 6·4 per 1000 of the population, estimated at 4,721,217 persons in the middle of the year. In each of the two preceding months the rate had been 6·7 per 1000. The lowest rates last month were recorded in Paddington, Kensington, Hammersmith, Hampstead, and Stoke Newington; and the highest rates in Hackney, Southwark, Bermondsey, Deptford, Wandsworth, Greenwich, and Woolwich. Six cases of small-pox were notified last month; of these three belonged to Stepney, two to Hackney, and one to Bethnal Green. The prevalence of scarlet fever last month continued to show a slight decline from that recorded in other recent months; among the various metropolitan boroughs this disease was proportionally most prevalent in Finsbury, Southwark, Bermondsey, Lambeth, Wandsworth, Deptford, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 2580 scarlet fever patients at the end of last month, against 3976, 3410, and 2866 at the end of the three preceding months; the weekly admissions averaged 271, against 449, 318, and 296 in the three preceding months. Diphtheria was rather more prevalent than it had been in the preceding month; the greatest proportional prevalence of this disease occurred in Hammersmith, Fulham, Poplar, Bermondsey, Wandsworth, Greenwich, Lewisham, and Woolwich. The number of

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING FEBRUARY, 1906.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1905.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,721,217	6	1212	629	—	89	2	28	339	—	2325	6·4	—	175	36	65	142	—	16	—	62	496	1·4	5743	15·9	118
West Districts.																										
Paddington	148,913	—	15	14	—	—	—	1	9	—	39	3·4	—	—	1	2	—	—	2	—	2	7	0·6	140	12·3	83
Kensington	180,952	—	16	21	—	2	—	1	9	—	49	3·5	—	10	2	3	2	—	—	—	2	19	1·4	188	13·5	119
Hammersmith	120,679	—	10	20	—	3	—	2	6	—	41	4·4	—	10	—	3	1	—	—	—	3	17	1·8	151	16·3	172
Fulham	161,985	—	33	25	—	1	—	1	9	—	69	5·6	—	6	2	3	1	—	1	—	3	16	1·3	163	13·1	135
Chelsea	74,672	—	11	9	—	1	—	—	6	—	27	4·7	—	4	1	2	—	—	—	—	1	8	1·4	85	14·8	81
City of Westminster	173,905	—	36	23	—	6	—	3	14	—	82	6·1	—	2	1	2	3	—	—	—	1	9	0·7	180	13·5	118
North Districts.																										
St. Marylebone	128,580	—	22	9	—	2	—	—	12	—	45	4·6	—	1	1	1	3	—	—	—	2	8	0·8	166	16·8	92
Hampstead	89,633	—	13	3	—	—	—	—	—	—	16	2·3	—	—	1	—	—	—	—	—	—	1	0·1	83	12·1	135
St. Pancras	236,455	—	60	16	—	7	—	—	14	—	97	5·3	—	5	3	1	12	—	1	—	—	22	1·2	309	17·0	119
Islington	344,937	—	89	31	—	4	—	4	10	—	138	5·2	—	19	3	4	4	—	1	—	—	31	1·2	426	16·1	113
Stoke Newington	53,217	—	7	2	—	—	—	—	4	—	13	3·2	—	2	—	—	3	—	—	—	—	5	1·2	44	10·8	97
Hackney	230,721	2	76	25	—	9	—	—	27	—	139	7·9	—	3	—	2	4	—	—	—	1	10	0·6	236	13·3	103
Central Districts.																										
Holborn	55,805	—	15	3	—	1	—	—	7	—	26	6·1	—	1	1	—	2	—	—	—	3	7	1·6	84	19·6	108
Finsbury	97,466	—	37	9	—	2	—	—	7	—	55	7·4	—	7	2	2	1	—	—	—	1	13	1·7	166	22·2	102
City of London	21,367	—	7	1	—	1	—	—	3	—	12	7·3	—	—	—	1	1	—	—	—	—	2	1·2	30	18·3	121
East Districts.																										
Shoreditch	116,108	—	13	15	—	4	—	—	9	—	41	4·6	—	6	—	2	10	—	—	—	4	22	2·5	190	21·3	113
Bethnal Green	130,609	1	27	16	—	3	—	2	11	—	60	6·0	—	1	1	2	10	—	1	—	1	16	1·6	212	21·2	158
Stepney	307,176	3	70	36	—	9	—	—	19	—	137	5·8	—	9	2	10	19	—	3	—	4	47	2·0	407	17·3	107
Poplar	170,673	—	42	27	—	6	—	1	15	—	91	7·0	—	2	1	2	9	—	2	—	5	21	1·6	235	17·9	103
South Districts.																										
Southwark	209,143	—	73	21	—	4	—	4	22	—	124	7·7	—	15	6	2	2	—	—	—	2	27	1·7	306	19·1	122
Bermondsey	128,629	—	78	20	—	—	—	—	15	—	113	11·5	—	1	2	2	4	—	—	—	4	13	1·3	181	18·3	134
Lambeth	315,774	—	114	33	—	5	—	3	19	—	174	7·2	—	18	4	3	10	—	2	—	5	42	1·7	397	16·4	122
Battersea	179,622	—	39	16	—	3	—	2	11	—	71	5·2	—	4	—	1	7	—	—	—	6	18	1·3	210	15·2	137
Wandsworth	273,381	—	105	52	—	6	—	—	22	—	185	8·8	—	4	—	2	6	—	—	—	2	14	0·7	257	12·3	122
Camberwell	274,132	—	62	16	—	1	—	1	20	—	100	4·8	—	18	1	2	9	—	2	—	4	36	1·7	323	15·4	132
Deptford	115,495	—	49	13	—	1	—	2	13	—	78	8·8	—	20	1	1	10	—	1	—	2	35	4·0	164	18·5	139
Greenwich	105,350	—	41	56	—	2	—	—	8	—	107	13·2	—	4	—	3	2	—	—	—	2	11	1·4	112	13·9	103
Lewisham	148,463	—	27	24	—	3	—	1	6	—	61	5·4	—	3	—	4	4	—	—	—	2	13	1·1	174	15·3	128
Woolwich	127,345	—	45	73	—	2	—	—	12	—	132	13·5	—	—	—	3	3	—	—	—	—	6	0·6	124	12·7	63
Port of London	—	—	—	—	—	1	2	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

diphtheria patients under treatment in the Metropolitan Asylums hospitals, which had been 723, 701, and 867 at the end of the three preceding months, had further risen to 926 at the end of last month; the weekly admissions averaged 116, against 100, 101, and 121 in the three preceding months. The prevalence of enteric fever showed a slight decline from that recorded in January; among the various metropolitan boroughs this disease was proportionally most prevalent in the City of Westminster, St. Pancras, Hackney, Shoreditch, Stepney, and Poplar. There were 79 enteric fever patients under treatment at the end of last month, against 115, 78, and 95 at the end of the three preceding months; the weekly admissions averaged 11, against 17, 13, and 16 in the three preceding months. Erysipelas was proportionally most prevalent in Hackney, Holborn, the City of London, Southwark, Bermondsey, and Deptford. The 28 cases of puerperal fever notified during the month included four in Islington, four in Southwark, three in the City of Westminster, three in Lambeth, and two each in Hammersmith, Bethnal Green, Battersea, and Deptford.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in public institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending March 3rd, 5743 deaths of persons belonging to London were registered, equal to an annual rate of 15·9 per 1000; in the three preceding months the rates had been 17·0, 17·6, and 16·0 per 1000. The death-rates last month ranged from 10·8 in Stoke Newington, 12·1 in Hampstead, 12·3 in Paddington and in Wandsworth, and 12·7 in Woolwich, to 19·1 in Southwark, 19·6 in Holborn, 21·2 in Bethnal Green, 21·3 in Shoreditch, and 22·2 in Finsbury. The 5743 deaths from all causes in London last month included 496 which were referred to the principal infectious diseases; of these, 175 resulted from measles, 36 from scarlet fever, 65 from diphtheria, 142 from whooping-cough, 16 from enteric fever, and 62 from diarrhœa. The lowest death-rates from these diseases were recorded in Paddington, the City of Westminster, Hampstead, Hackney, Wandsworth, and Woolwich; and the highest rates in Hammersmith, Finsbury, Shoreditch, Stepney, Southwark, Lambeth, Camberwell, and Deptford. The 175 deaths from measles were slightly fewer than the corrected average for the corresponding periods of the four preceding years; this disease was proportionally most fatal in Hammersmith, Finsbury, Southwark, Lambeth, Camberwell, and Deptford. The 36 fatal cases of scarlet fever showed a small decline from the corrected average number; among the various metropolitan boroughs this disease showed the greatest proportional mortality in Fulham, Finsbury, Southwark, Bermondsey, and Lambeth. The 65 deaths from diphtheria were 22 below the average number in the corresponding periods of the four preceding years; this disease was proportionally most fatal in Hammersmith, Chelsea, Stepney, Greenwich, Lewisham, and Woolwich. The 142 fatal cases of whooping-cough showed a decline of 38 from the corrected average number; among the various metropolitan boroughs the highest death-rates from this disease were recorded in Stoke Newington, Shoreditch, Bethnal Green, Stepney, and Deptford. The 16 deaths referred to enteric fever were 11 below the corrected average; of these 16 deaths, three belonged to Stepney and two each to Paddington, Poplar, Lambeth, and Camberwell. The 62 fatal cases of diarrhœa just exceeded the average number in the corresponding periods of the four preceding years; among the various metropolitan boroughs this disease was proportionally most fatal in Hammersmith, Holborn, Shoreditch, Poplar, Bermondsey, and Battersea. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was more than 22 per cent. below the average.

Infant mortality, measured by the proportion of deaths under one year of age to registered births, was equal to 118 per 1000. The lowest rates of infant mortality were recorded in Paddington, Chelsea, St. Marylebone, Stoke Newington, and Woolwich; and the highest rates in Hammersmith, Fulham, Hampstead, Bethnal Green, Battersea, and Deptford.

LONGEVITY.—Mr. David Williams of Hendrefawr Farm, near Ammanford, South Wales, celebrated the 102nd anniversary of his birth this month. He was born at Llannon, near Llanelly, in March, 1804.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: R. H. J. Browne to the *Albion*, on recommissioning, and E. H. Meaden to the *Illustrious*, on completing. Staff Surgeon: J. A. L. Campbell to the *Repulse*, on recommissioning. Surgeons: S. H. Facey to the *Pembroke*, for disposal; D. H. Vickery to the *Illustrious*, on commissioning; P. W. McVean to the *Tyne*, on recommissioning; A. S. Bradley to the *Crescent*; and H. Cooper to the *Research*, lent, for surveying services.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Majors to be Lieutenant-Colonels (dated Jan. 30th, 1906):—Michael T. Yarr, Charles H. Melville, Bernard L. Mills, Horace Cocks, James B. Wilson, John Kearney, Frederick W. G. Hall, Arthur Kennedy, Henry P. G. Elkington, John B. W. Buchanan, Henry M. Adamson, Tudor G. Lavie, Harry H. Brown, Thomas H. Corkery, and James J. O'Donnell.

Lieutenant-Colonel John Kearney retires on retired pay (dated March 14th, 1906).

Colonel G. D. N. Leake has returned to India from sick leave. Lieutenant-Colonel W. L. Reade is posted to the Secunderabad Division on arrival in India. Captain A. D. Waring is posted to the Belfast District for duty at Belfast.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Gloucestershire: Surgeon-Lieutenant-Colonel J. S. Carleton is granted the honorary rank of Surgeon-Colonel (dated March 14th, 1906). 2nd Middlesex: Surgeon-Major (Honorary Captain in the Army) A. Thorne to be Surgeon-Lieutenant-Colonel (dated Feb. 19th, 1906).

Royal Engineers (Volunteers): 2nd Lancashire (The St. Helens): Surgeon-Captain R. Jackson to be Surgeon-Major (dated March 14th, 1906).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Scottish Command: Aberdeen Companies: Peter Howie to be Lieutenant (dated March 14th, 1906). Edinburgh Company: John May Darling to be Lieutenant (dated March 3rd, 1906). Glasgow Companies: Captain (Surgeon-Captain, Army Medical Reserve of Officers) S. M. Sloan resigns his commission (dated March 14th, 1906).

AWARDS FOR GALLANTRY.

The Chapter-General of the Order of the Hospital of St. John of Jerusalem in England has, on the recommendation of the Commander-in-Chief in India, conferred the medal for distinguished acts of gallantry in saving life on land at imminent personal risk on a number of officers and men, in recognition of their gallantry during the earthquake at Dharmsala on April 4th, 1905.

THE TREATMENT OF VENEREAL DISEASE AND SCABIES IN THE ARMY.

We have received an official copy of the final report of the Commission appointed by the Advisory Board of the Army Medical Service, forming the last of the series on the above subject, in which the principal conclusions to be drawn from the collected information are admirably set forth, together with practical recommendations as to treatment. We have been very favourably impressed with the scientific and practical value of the information contained in this final report. The whole inquiry has evidently been conducted in a very careful and exhaustive way and the results, which are for the most part new and not to be found elsewhere, are arranged and stated in this final report with great clearness and precision. We strongly advise the medical officers of our public services and all who are interested in the subject and desirous of keeping themselves abreast with the latest views and researches to read the report for themselves, for they will find a great deal of valuable and practical information not, as we have said, procurable elsewhere.

ARMY POLICY.

Mr. Haldane's recent speech explanatory of the Army Estimates has the great merit of having lifted the subject of army organisation up to a higher plane than that which it has hitherto occupied. The speech was an eminently fair, plain, and statesmanlike as well as prudent exposition of the new War Secretary's views. The subject is confessedly one of the greatest importance and of unusual difficulty and complexity and Mr. Haldane showed both his

courage and business aptitude by his method of dealing with it. There was nothing, however, in his long speech to bring it directly within the purview of the medical journalist, although, when more closely looked at, it will be found to be connected intimately with the question of the improvement of public health of the civil population in times of peace and with that of an adequate medical and sanitary provision for our armies in time of war. Mr. Haldane's speech dealt mainly with broad, common-sense principles; it only pretended to set forth views of a more or less tentative and provisional kind in regard to what should be our future army policy and to indicate the line of reasoning that had commended itself to his mind as the best and most suitable to our insular conditions and national institutions, habits, and customs. There is much in what Mr. Haldane has said which naturally invites inquiry and calls for comment but his speech does not lend itself to any brief notice.

Correspondence.

"Audi alteram partem."

THE INSTITUTE OF MEDICAL SCIENCES AND THE MEDICAL CURRICULUM.

To the Editors of THE LANCET.

SIRS,—A great many of your subscribers must have felt considerable surprise on reading in THE LANCET of March 10th, p. 692, that "the idea of conducting the teaching of anatomy and physiology in institutions apart from hospitals, eminently desirable as it is from the point of view of hygiene, was a novel one to the majority of medical teachers in London." If this be so "the great majority of medical teachers in London" must be indeed youthful. Surely, many remember the idea being discussed in the "eighties"; also that some years ago (owing to the action of the Statutory Commissioners, 1898) the mist of uncertainty as to what would be the outcome of the idea was cast over the medical schools in London; and that in 1901 two-thirds of the London Medical Schools, when canvassed by the Medical Faculty of the University, were found to be unfavourable to the idea. It is to be regretted that the support of THE LANCET is given to a scheme which, if it ever becomes effective, must result in separating the teaching and study of anatomy and physiology from direct association with the teaching of the clinical and operative practice of medicine and surgery, of which these sciences are the foundation and backbone. The present time is pregnant with warnings as to the disadvantages and dangers of separating, in other practical branches of knowledge, the study of technology from the study of the sciences upon which they are based.

In reference to the proposed Imperial Institute of Technology and the New Royal College of Science, as also in reference to the coal tar colour industry, the persons best able to judge have been laying stress in the public press upon the importance of the close association between the teaching of pure and applied science and of taking the teaching of science out of purely academic hands. The scientifically trained young men from the universities, crammed with formulas and text-book knowledge, are found, we are told, by the manufacturers, to be of no use to them; and it is hoped that the New Royal College of Science will remove the limitations of scientific knowledge as taught in the schools and universities. It is felt that "the pure scientist must be kept in touch with the technologist," that technology should not grow up apart from academical science; and the committee on the proposed Technological Institute at South Kensington says "it is of the first importance that there should be no divorce between teaching and research in technology on the one hand, and in pure science on the other."

These same views are equally applicable to the study of anatomy and physiology in their relation to medicine and surgery. The medical student has to study anatomy and physiology not merely to become imbued with the scientific spirit, but to acquire definite scientific knowledge towards a working, practical end. However desirable it may be (and no one will grant that it is so more readily than I) that every student of medicine should receive a university training—and that, too, in literature as well as in science—yet we know that this is far from being possible for all; and it ought to be borne always in mind that the business of the medical schools is to turn out medical practitioners. This being the object in view it is in the highest degree ill-judged to attempt to compel students to devote three years *out of a five years' medical curriculum* to university training and academical methods. It is well that anatomy should be integrated with physiology, that structure and function should be studied in association with one another, that development and variations in form should be illuminated by embryology and biology, and organisation shown to be adjusted to conditions and requirements. But by what right has this method of teaching come to be considered special to "university teaching"? This same method has nowhere been better employed than in some of the smaller medical schools in London.

It ought, however, to be unnecessary to have to assert that one of the chief uses of anatomical study is the training and discipline it affords for the eye and the hand, and that in this respect the assistance which a student gets from a good demonstrator in the dissecting-room of a small school is worth many times more to him in preparing himself for the practice of his profession than the most learned lectures by the most profound professor in a university. If "concentration" of teaching in a university has all the advantages claimed for it by its advocates, how comes it to pass that extra-mural schools and classes exist in those centres where university teaching is concentrated?

Are we to admit as an advantage to mathematical study "the elements of physics which the student should bring with him from school, where mechanics should form a quickening part of his mathematics," and to deny that the near presence of actual disease in, of injuries to, and operations on, the living human body—of which the student hears from others in a medical school, without his own science studies being either interfered with or interrupted—has any quickening effect upon his study of anatomy?

As to the "economy" of concentration, the mere repetition of the statement will not make it true. I have shown elsewhere, from the figures put forward by the University of London and its medical faculty, that whilst the proportionate number of teachers at the proposed institute will be the same as at the existing medical schools of London, the salaries proposed to be paid to them are at the rate of £16,250 a year more.

The idea that the anatomical department of a medical school impairs the hygiene of the hospital is—when we consider the modern methods of preserving the subjects, the construction of the store rooms, and the distance in most instances of the anatomical department from the hospital buildings—as fallacious as the argument that the abandonment of the dissecting rooms and physiological laboratories would be welcomed by the governors of the hospitals. I know that as regards the Middlesex Hospital the very reverse is the case and that their abandonment would entail a very heavy loss.

Instead of squandering tens of thousands of pounds on a site and buildings for the purpose of concentrating the teaching of anatomy and physiology at South Kensington, it would be far more to the point if the University could contribute to the upkeep of the existing medical schools as affiliated colleges of the University.

The objections to an Institute of Medical Sciences in London for the teaching of the preliminary science subjects of the medical curriculum, though of a different character, are no less strong than those against the teaching of anatomy and physiology at such an institute. And is it worthy of the London University, impecunious as it is and largely dependent upon a Government subsidy, to be begging money to erect costly buildings for the teaching of the elements of these preliminary sciences? This teaching is already amply provided for in and about London and therefore the University would be entering into competition with numerous schools and colleges which are now doing the same work quite satisfactorily. There are at the present time no less than 95 institutions other than medical schools and universities recognised by the two Royal Colleges as places of study in science, 35 of which have been recognised for biology, chemistry, and physics, and 60 for chemistry and physics. Large sums have been spent at many of these places to equip laboratories and remunerate the staffs of teachers. At Dulwich £18,000 are now being expended in providing science laboratories and a museum,

which are to be opened within 12 months. Moreover, sooner or later these preliminary sciences will no doubt be struck out of the medical curriculum. The curriculum must be lightened and that before very long. Is it not cruelly unfair to the students and their parents, and is it creditable to the authorities, that a curriculum of any given number of years' duration should be so overburdened with subjects of study that it is impossible for the average student to complete successfully the course in less than half again as many years as the nominal length of the curriculum? Is it honest to set before parents a curriculum arranged for five years, knowing all the while that the sons of those parents will almost surely require seven or seven and a half years before they become qualified? The length of the curriculum ought to be, and could be, made proportionate to the extent and number of the subjects to be studied.

The very statistics and arguments which are used against eliminating the preliminary sciences from the curriculum, and against extending the period of study even though these sciences are retained in the curriculum, are very strongly in favour of such elimination. And if eliminated, one of the vaunted needs of an Institute of Medical Sciences in connexion with the University of London disappears. I would gladly see, and would do what lay in my power to assist, the establishment of an Institute of Medical Sciences other than for schoolboys and first and second years' students of anatomy and physiology. There are many purposes for which such an institute is badly needed, e.g., to assist biological, physiological, and pathological investigations and research, for the good of agriculture, animals, and man; and upon which the money it is proposed to waste on this needless school of elementary science and on superfluous dissecting rooms might with unmixed advantage be spent. It is said that when Albert de Broglie was elected to the French Academy M. Villemain remarked: "Eh! bien, pourquoi pas? Il n'y a rien contre lui, excepte ses écrits, et c'est si peu de chose." Similarly, it may be said that there is nothing against the proposed Institute of Medical Sciences except the objects for which it is proposed, and nothing much against the statistics and statements respecting the preliminary sciences and the medical curriculum except the conclusions which have been officially drawn from them.

I am, Sirs, yours faithfully,

Cavendish-square, W., March 12th, 1906. HENRY MORRIS.

PROPOSED UNION OF MEDICAL SOCIETIES: A DISCLAIMER.

To the Editors of THE LANCET.

SIRS,—I trust that you will have the goodness to allow me the courtesy of your columns to make a personal explanation. At the recent annual meeting of the Royal Medical and Chirurgical Society, *apropos* of the question whether the premises at 20, Hanover-square, would be suitable for the proposed amalgamated society, I understand that one of the Fellows present stated that I had been consulted as to the condition of the premises and that I had reported "that the building would require pulling down and rebuilding in about 50 years." *I desire to say that there is not the slightest foundation or justification for such a statement.* I have not discussed the matter with any but the officers of the society and had I been asked for my opinion as to the probable duration of the present building I should have stated emphatically that it was, in my opinion, as likely to stand for another 100 years as any building of its age in London, and I have not the slightest doubt that it will remain a good and useful building for even a longer period if kept in proper repair.—I am, Sirs, yours faithfully,

JOHN BELCHER, A.R.A., President R.I.B.A.

Hanover square, London, W., March 8th, 1906.

THE ETHICS OF THE MEDICAL PROFESSION IN RELATION TO SYPHILIS AND GONORRHŒA.

To the Editors of THE LANCET.

SIRS,—The real gravity of the issues at stake must be my excuse for asking space for a rejoinder to Mr. Campbell Williams's courteous reply to my criticisms. What, now, were the main points of my arguments? They were: (1) that the danger to the health of the community by the spread of venereal disease was grossly exaggerated; (2) that the suggested remedy having signally failed in those very countries where it had been most rigorously enforced was thus of proved inefficiency; and (3) that not only was it futile but in addition was positively mischievous in that it brought into existence manifold evils far more baneful in effect than the evil it was destined to prevent.

In his reply Mr. Williams evades the gravamen of my attack and contents himself with the reiteration of *ex-cathedrâ* utterances. To take his replies to my three propositions seriatim, Mr. Williams, as an answer to the first, favours me quite unnecessarily with a lengthy list of the pathological phenomena and sequelæ of venereal disease with which I was already familiar and which, with him, I equally deplore. But what possible relevance has this to the immediate question at issue between us? We are not discussing the sequelæ of venereal disease but the relative amount of its incidence on the population at large. I contend that venereal disease at the present day is less in quantity and severity than 100, or even 50, years ago, while at the same time treatment has increased in efficiency out of all recognition. When Mr. Williams can prove the contrary, and also give reliable statistics showing that the percentage incidence of venereal disease is really alarming in relation to the community as a whole, then, and then only, will he disprove my assertion that the danger of venereal disease to the community has been vastly exaggerated.

To my contention that his proposed remedy is a proved failure Mr. Williams's reply is really astonishing. He brushes aside as relatively worthless (referring to it merely as a "disparaging comparison") the admitted failure of State regulation in those countries where *par excellence* it has been *universally* and *rigorously* enforced (a surgical friend aptly reminds me that Brussels, the best regulated city in Europe, was the first to call attention to this failure at the last International Congress), yet, on the other hand, he quotes approvingly the authority of Hill and Cooper as evidence of the "sanitary benefits which the enforcement of the Acts conferred upon those districts in which they were operative" (i.e., in this country where the Acts were only *partially* enforced), while to crown this logical *tour de force* he himself naively remarks that "it is requisite for it [the Contagious Diseases Act] to be general throughout the country and not to restrict its operation to a few chosen localities; *for therein lies the certainty of failure.*" Comment is needless. Take the army returns for the protected districts in the United Kingdom before, during, and after the period of protection. In 1864, just before the first Contagious Diseases Act came into operation—the proportional figures per 1000 of soldiers admitted to hospital suffering from venereal diseases was 260. Ten years later when the Act was increased in scope it was 126 but in 1883 it had risen again to 234 in spite of protection. The protection being removed in that year it rose to 276 but afterwards fell again progressively to 191 in 1895 without any protection. So much for mere statistics. If the fall in 1874 was due to protection was the rise in 1883 also due to protection, and what was the fall in 1895 with no protection due to? Statistics are like algebraical formulæ, useful in mathematical calculations but as data from which to draw far-reaching inferences are often mischeviously misleading since, like algebraical symbols which take no account of whether forces, values, or quantities are to be expressed, statistics do not express those manifold varying conditions which *must* be taken into account before right conclusions can be drawn.

In answer to my third contention, Mr. Williams admits that serious evils *have* beforetime been brought into existence by meddlesome legislative interference, but remarks "that one could imagine that it is possible to devise some plan of official supervision of subordinates which would curb individual denouncing power."

Mr. Williams is of a more optimistic turn of mind than many people where officialdom is concerned. It is an *a priori* inference from human nature that irresponsible power is sure on the average of cases to be grossly abused. Some years ago at a trial in France the fact was brought out that the people of Lille had been subjected to an organised terrorism which had grown out of the system of prostitute inspection. Though 500 women were said by one of the criminals to have fallen into their hands, though they had been blackmailed and outraged to this extent, yet the practice went on for the reason, obvious enough, that those aggrieved preferred to submit rather than endanger their

character by complaining. "Plans" for the avoidance of evils anything approaching this should surely not be left to the "imagination." Mr. Williams can see no difference between consigning a small-pox patient to a hospital and immunising a prostitute. I may be excused if I fail to see the parity. A small-pox patient when cured is not forcibly put in a degraded class and subjected to police domiciliary visits, has no social stigma, and is not treated as a semi-criminal. Is a woman, because a prostitute, to have no legal right, no personal liberty? In other words, a system of white slavery is to be maintained for the safe exercise of the male sexual instinct. See now the paradox—to develop a muscle exercise it, to develop an intellectual faculty exercise it, but to develop a moral faculty our social reformers never seem to dream that *it* also must be exercised. On the contrary, in effect, they imply that if a man be lazy feed him at the expense of others. If a drunkard remove the source of temptation. If sexually dissolute make dissipation easy. But do not ask him to exercise his faculty of self-restraint. As Spencer well says: "With the blindness born of ignorance men strive to fly in the face of the natural law that each individual shall suffer the good or evil effects of his own actions and in so doing unlock the most portentous possibilities of crime and injustice."

I am, Sirs, yours faithfully,

March 12th, 1906. DUDLEY BURNEY.

THE DANGERS OF THE FLUTE-KEY FLASK FOR ADMINISTRATION OF ETHYL CHLORIDE.

To the Editors of THE LANCET.

SIRS,—I venture to call attention to the methods at present in vogue for administering ethyl chloride. The three principal methods with which I am acquainted are: (1) the flute-key flask; (2) Messrs. Duncan Flockhart's flask; and (3) Messrs. Sumner's measure. The first I consider a dangerous method and should be glad to have the opinion of others on this important matter. Personally, I have always been able to manage to spray out the required quantity into the inhaler but with difficulty. I have, however, met a number of medical men who have been quite unable to do this, often putting in too much or too little, owing to the difficulty of manipulating the flute key. I have on several occasions known the whole of the top of the flute-key flask to come off, leaving the anæsthetist in a fix, besides wasting the drug. I, however, cannot speak too highly of the simplicity of the second and third methods mentioned. To those who care to use the flute-key flask this may still be done safely by measuring 85 minims of ethyl chloride in a minim measure and then putting this quickly into the inhaler.

I am, Sirs, yours faithfully,

THOMAS YOUNG SIMPSON.

Royal Albert Hospital, Devonport, March 10th, 1906.

THE ADMINISTRATION OF ADRENALIN IN CASES OF FAILURE OF THE CIRCULATION.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 3rd, p. 595, Dr. H. O. Butler describes an interesting case of a child apparently suffering from severe vaso-motor exhaustion following the crisis of pneumonia. I have for some time been carrying out an exhaustive investigation into the action of this and similar drugs which act upon the blood pressure and some of the results have already been published in my Hunterian Lectures on Shock in 1905.[1] Adrenalin is a tremendously powerful drug and of immense value if properly used, but there are some facts relating to its action and method of administration which are, I venture to think, but imperfectly understood, and if you will permit me I should like to point these out. In the first place, Dr. Butler in his account of the case speaks of adrenalin as a vaso-motor stimulant. This is a mistake, as in no sense can adrenalin be called a vaso-motor stimulant. Adrenalin acts directly upon the vessel walls and not through the nerve centres at all, and it is upon this very fact that its great value in cases of vaso-motor exhaustion depends. It acts by causing constriction of all the peripheral vessels and so raising the blood pressure. This action has nothing to do with the nervous system and in an animal the whole of whose central nervous system has been destroyed the drug acts in the same way and to the same extent as in a normal animal. Dr. Butler undoubtedly saved the child's life by his timely use of adrenalin, but I think that he would have obtained even better results had he used a smaller dose of the drug. The apparent death of the child after the injection of 15 minims of adrenalin was probably due to an excessively high blood pressure, with which the heart in its already weakened condition was temporarily unable to cope. An injection of one or two minims or even less would have been enough to raise the blood pressure to the necessary height. Adrenalin is a very powerful drug and minute doses, provided they get into the peripheral circulation, will raise the blood pressure far above the normal level. In cases of failing circulation with a very low blood pressure adrenalin if injected under the skin will have a very poor chance of reaching the peripheral blood-vessels, as there is not sufficient circulation, and in such cases it must be administered by intravenous infusion so as to drive it into the circulation. When adrenalin is used for intravenous infusion it should never be used in a stronger solution than 1 in 20,000. The drug, besides acting on the peripheral blood-vessels, acts also upon the cardiac muscle, causing contraction, and if an excessive dose be given the heart muscle passes into a condition of rigor. Also, the very high blood pressure which immediately follows a big dose may result in fatal dilatation of the heart. Adrenalin should only be given in very small doses and should be repeated frequently, as the action of the drug is very transitory, its full effect only lasting about two minutes. Lastly, I should like to point out that adrenalin administered by the mouth or rectum has absolutely *no effect whatever* upon the circulation. I believe few of us realise what an enormously powerful drug adrenalin is and of what value in saving life it may be. I hope with Dr. Butler that his case may be the means of drawing attention to its usefulness in similar instances.

I am, Sirs, yours faithfully,

P. LOCKHART MUMMERY.

Cavendish-place, W., March 12th, 1906.

[1] THE LANCET, March 18th and April 1st, 1905.

AN OFFICIAL STANDARD OF PURITY FOR JAM.

To the Editors of THE LANCET.

SIRS,—I regret that in THE LANCET of March 10th my regard for concision should have exposed me to a misunderstanding. When I stated that glucose was used by confectioners to prevent crystallisation I should also have said that this was *one* of the reasons for employing a certain percentage of that article, and this you do not deny is a preferable method to using cream of tartar. The other reason is not, I must insist, its cheapness but that it makes a more palatable sweetmeat. But neither in the making of jams nor sweets does the proportion of glucose to sugar ever exceed 25 per cent. To use more is practically impossible. On the question of cost you will permit me to say this: the price of glucose is at present 11*s.* 6*d.* per hundredweight and cane sugar can be bought as low as 11*s.* per hundredweight. But as glucose contains about 25 per cent. of moisture which must be dissipated its cost is still further raised, making it some 3*s.* 3*d.* per hundredweight dearer than sugar. To use the extra-refined cane sugar such as you refer to is quite out of the question. It never has been, is not, and could not be used by confectioners save on the condition of making jam and sweets an almost unapproachable luxury. Even to use exclusively the cheaper cane sugar would be quite impossible, for the simple fact that there is not enough to supply a mere fraction of the demand even if it were only used generally for household purposes. For the rest, if I am mistaken in thinking that your note identified adulteration with unwholesomeness and contained the implication that cheap jams were less wholesome than dear jams, I must express my regret; but then I am at a loss to see what was the point of your note. Nor can I see any reason for insisting upon the use of cane sugar save on the assumption that beet is less wholesome. I had certainly never expected that THE LANCET would worry itself about a mere question of marks for merchandise unless it involved some consideration affecting the health of the community. If the percentage of glucose used in jams or the ingredients of

the cheap jams make them less wholesome then THE LANCET would be quite justified in insisting that the labels should inform the purchaser what he is buying. But as you do not deny, and therefore I must assume admit, that beet sugar is as pure and wholesome as cane sugar and that the glucose used by confectioners is as wholesome as either, the medical reason for any agitation on the subject seems to be non-existent.

Should you, Sirs, be inclined to send to me a representative for the purpose of testing the accuracy of the statements I have made I shall be pleased to supply him with the necessary proofs. I am, Sirs, yours faithfully,

March 12th, 1906. MORRIS STREIMER.

INCIDENTAL INSOMNIA.

To the Editors of THE LANCET.

SIRS,—It commonly happens that persons otherwise apparently in good health find a difficulty in sleeping without a break, their night's rest being interrupted by turns of wakefulness; after falling asleep for an hour or two they awaken—a modified or incidental insomnia takes the place of normal repose. I believe, and I suggest, that this may be due to a disturbance of the equilibrium of the cerebral circulation. The cause of the disturbance may be very various. I do not propose to enter into the question of cause but I have in many instances successfully counteracted the result by forced *inspiratory* movements, by assisting and encouraging the return flow of blood to the heart: by a rapid and thorough expansion of the chest cavity, by the vacuity produced, the blood in the great veins of the neck and upper thorax is sucked in and hastened on to its ultimate destination.

The large serrati muscles (costo-scapulares) are more especially called on for this duty. The serratus, by its hindermost attachment to the posterior border of the scapula, as a muscle of "extraordinary" inspiration, requires for its action in this capacity that the scapula should be steadily and firmly held to the spine by the muscles allocated to this end—in other words, by the shoulders being vigorously held backwards. The deep breathing thus carried out for 8, 12, or 15 inspirations usually suffices to induce the wished-for somnolence. Anyway it is an experiment easily tried and without risk.

The influence of respiratory movements is demonstrated by the effect of a prolonged and forced *expiratory* action. The impediment to the return flow of blood is easily to be observed when a vocalist with an uncovered neck is singing a long-sustained high note; the external jugular veins will be seen in their course across the sterno-mastoid muscle in a state of extreme distension, accompanied by congestion of the veins of the head and face, indicating hindrance to the blood current towards the heart.

I am, Sirs, yours faithfully,

York-terrace, N.W., March 13th, 1906. T. W. NUNN.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, LONDON.—A reproduction of the Nice Carnival will be held at the Crystal Palace on Friday and Saturday, June 1st and 2nd, in aid of this hospital. The fêtes will commence each day in the afternoon, when there will be a procession of decorated cars, divided into three classes—viz., a heavy, a light, and a children's class. In connexion with the processions there will be a battle of flowers. The entry fees will all be distributed as prizes and for the three classes will be respectively two guineas, one guinea, and half a guinea. On both evenings a costume ball will be held on a floor to be specially laid in front of the Handel Orchestra, the price of tickets for which will be half a guinea and will include light refreshments. It is hoped that fancy dress will be generally worn but no masks will be allowed. The other attractions will be a theatrical play, a *café chantant*, and a drawing for £5 coupons presented by certain firms entitling the winners to select goods without any payment from the firm whose coupon has been won. The charges for admission will be, on the first day of the carnival, 2*s.* 6*d.*, and on the second day 1*s.*, of which the directors have generously promised to give a considerable proportion to the hospital. The carnival is being organised by an organising expert, Mr. E. Douglas White, 19, South Molton-street, Bond-street, W., who is asking that any lady or gentleman willing to assist in the work by acting as an accredited agent or joining any of the 50 district committees should communicate with him.

THE FIFTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

EXCURSIONS IN PORTUGAL.

(FROM OUR SPECIAL COMMISSIONER.)

IT is time that preparations should be taken in hand and plans thought out so that those who will attend the Fifteenth International Congress of Medicine may make the best use of their opportunities. Obviously all who can afford the time and extra outlay will endeavour to see something of the beautiful and interesting country within easy reach of Lisbon. So far as Portugal itself is concerned this can be done with ease and the expenditure of comparatively little time or money. As it is the Portuguese people who are endeavouring to give the medical profession a hearty reception the visitors will naturally be expected to manifest a grateful interest in the country. Nor will such sympathy be without its reward. The only wonder is that a greater number of tourists and sightseers do not visit this part of Europe. There is a wonderful variety of scenery in Portugal. The romantic rocks, cliffs, and rugged islands on the coasts afford a complete contrast to the lagoons of Aveiro or the vine-clad hills that flank the Douro and the vast ranges of mountains that become more and more Alpine in appearance as they approach the north of the kingdom. The vegetation, especially the semi-tropical vegetation, is said to be the richest in Europe; it is certainly the most ancient so far as exotic plants are concerned. These were brought over from Brazil and the South Seas, from Africa, India, and Cathay by the early Portuguese navigators who were the first European pioneers. Many plants collected by these hardy mariners were sent by King Emmanuel the Fortunate, who reigned over Portugal from 1496 to 1521, to the Carmelite monastery of Bussaco. The monks took the greatest care of such gifts and soon a forest of exotic shrubs and trees grew up. Indeed, so sacred was this trust considered that the Pope Urban VIII. issued a special Bull in 1643 threatening with excommunication anyone who injured these plants.

To-day at Bussaco the palace originally designed as a marriage offering to the present King, H.M. Carlos I., has been converted into one of the best and certainly most beautifully situated hotels in Portugal. Its balconies, its tower 140 feet high, overlook these marvellous plantations. Close at hand is the battlefield where Wellington defeated Massena in 1810 and there are here innumerable walks over slopes and gullies amid fern, aloes, palms, acacias, and cork trees. Flowers and fruit abound on all sides. Camellias grow wild and cover the bushes with pure white, crimson, or pink flowers. The almond, fig, orange, lemon, and olive trees supply useful fruit as well as scent and shade. The records of the Agricultural Department at Lisbon show that no less than 4000 varieties of vegetation are grown in the old monastery grounds which have now become the gardens of the Bussaco Grand Hotel.

Other visitors, however, may be more interested in such sights as the picturesque Castle of Pena at Cintra; that also dates from the time of Emmanuel the Fortunate. It was built where a Moorish fortress stood and is a mixture of Moorish and Gothic architecture. Indeed, throughout Portugal there is much to attract the lover of ancient architecture and the archæologist. What, for instance, can be more quaint than the old university town of Coimbra, founded in the fourth century, devastated by the Moors in the ninth century, and which became for a while the capital of Portugal in the twelfth century? To-day it is the only university town in the kingdom and here the degrees are still conferred in the ancient manner just as ordered in 1431 by King John I. The students also keep up the old dress and customs and may be seen, guitar in hand, finding in music relief from study. At Oporto, at Lisbon, and many other places old Roman and Moorish remains are to be found amid splendid structures that date from the Middle Ages, and thus Art and Nature have combined to render the country interesting and beautiful. It is obvious, therefore, that the first thought of those who have either finished or not commenced their Congress work will be how to see something of Portugal.

The first question will be whether such an excursion had better be attempted before or after the Congress. The

weather is more likely to be fine, though perhaps a little hot after. Any delay or hitch in organisation will probably have been rectified by that time—for instance, the railway servants will be better acquainted with the nature of the facilities to be accorded to members of the Congress. On the other hand, past experience of many congresses leads me to suggest that it would not be safe to place too much reliance on the promised reduction of 50 per cent. on railway fares. This concession is generally hedged in with a good deal of red-tapeism, and, in any case, the easier it works the greater the number of excursionists, the greater the crowding in the hotels, and the higher the prices charged. Thus what is saved in railway fares is sometimes insufficient to cover the increased cost of living at the hotels. It certainly is more comfortable to make excursions either before the Congress or some little time—a week or so—after it. As, however, on this occasion Easter just precedes the Congress it would be imprudent to attempt an excursion to Seville and the south of Spain. No tariff, coupon, or contract ever holds good during Holy Week. There is no reason, however, why excursions should not be made in Portugal during that time.

To see the open country the best method is to form parties of four and to share the expense of a carriage. Thus from Lisbon or Cintra the train can be taken to Caldas da Rainha, where there are celebrated sulphur baths which were opened by Queen Leonora in 1485, and since then a hospital has been available for sufferers, so there must be some ancient medical records. Here a carriage could be obtained to drive to Alcobaça where 999 monks are supposed to see that the celebration of mass never ceases day or night in the Cistercian Abbey which was founded in 1148. After visiting the ancient buildings the drive would be continued to Batalha where, in 1388, the Dominicans began to build after English models and the name is supposed to be derived from William the Conqueror's Battle Abbey. The masons were brought over from England by Philippa of Lancaster, daughter of John of Gaunt, who married John I. of Portugal in 1416. Here are Royal tombs and much to interest historian, artist, and architect. The drive might now be continued through venerable pine forest and then over cornfields and vineyards to Leiria, once an important Roman town. The train could be taken again near Thomar for the university town Coimbra. Here another carriage could be procured to drive to Bussaco, which would be the culminating point of the excursion. From this last place the excursionist could either return to Lisbon or go on to Oporto. The Booth line claim that they have made the most systematic attempt to organise trips for their passengers to visit Portugal and the South of Spain. Their Lisbon agents, Messrs. Garland, Laidley, and Co., of 26, Travessea da Ribeira Nova, will keep their offices open for all members of the Congress and they have guides and interpreters ready to assist in any way. The excursion described above, including carriages, lunch baskets, railway fares, and hotels, could be managed by them for about £10 and would last some ten days. They state that it is not their business or interest to make money out of such excursions, but they want medical men especially to see for themselves what advantages Portugal possesses as a health and holiday resort, so that the passenger traffic between England and Portugal may increase. There are plenty of passengers to and from South America but they for the most part embark and disembark at Lisbon, so that during the first and last part of the journey from the Mersey to the Amazon river there is generally ample room on board these ships. For those who wish to make an excursion before the Congress the *Jerome* will leave Liverpool on March 28th and Havre on April 1st, reaching Lisbon, after a stay at Oporto, on April 7th. The *Ambrose* will reach Lisbon on April 17th, that is, just in time for the Congress, and there are returning boats from Lisbon for Liverpool on April 29th, May 9th, 18th, and 28th. For their passengers during the Congress week the Booth Line has retained 70 rooms in the first-class and new Hôtel d'Inglaterra at £1 a day all included. This hotel is close to the Congress hall and on the celebrated Avenida.

Other lines are also offering advantages to the members of the Congress. The Royal Mail Steam Packet Company, the Pacific Steam Navigation Company, and the Compagnie des Messageries Maritimes give 15 per cent. reduction on first-class return tickets, which are available on the ships of all three companies. The excursion organised by the Orient Pacific Line, which places the magnificent steamer *Ophir* entirely at the disposal of the members of the Congress to serve both for travelling and as a hotel when at Lisbon, has already been described. The Hamburg-Amerika line is doing the same with its ship *Oceana*, while from New York the Norddeutscher Lloyd runs its steamer *König Albert* to Lisbon where it will likewise serve as a hotel for the members of the Congress who are passengers on board. Thus it will be seen that there is a variety in the choice of the ways and means to attend the Congress.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Manchester Sewerage Scheme.

MANCHESTER for ever strives to escape the stern rebukes or the touching appeals of the Mersey and Irwell joint committee, but never succeeds for long together in doing so. Complaints as to the effluents were made by the committee six months ago and the corporation had a time extension of six months granted so that a second series of contact beds might be made. One bed of half an acre has been working now for six months with extraordinary satisfaction, but slow progress is said to have been made with the rest of the beds required to deal with the whole of the sewage. The samples from "the effluents treated by second contact beds showed that only 0·41 of oxygen was absorbed in a four-hours' test." On the same day samples taken from the tanks and storm filters showed 2·75 and 2·82, the first being excellent and the last two distinctly bad. There was some discussion in the committee as to whether the corporation, urged to economise by the ratepayers, was giving sufficient money for carrying out the sewage work. It was pleaded by one of the Manchester representatives that their scientific advisers had led them to believe that 46 acres of first contact beds and 30 acres for storm overflow would purify the sewage but it had not done so. They had also told them that the standard of the committee was an impossible one. The chairman said that the figures recorded by the officials of the joint committee showed that the standard was not impossible and that when the matter was put before the corporation "they would see where their duty lay." So the corporation escape this time with a "wigging," for a letter is to be written "and the matter adjourned pending a reply."

"Betting in Human Lives."

In your issue of March 3rd mention is made of seven certificates of death in respect of insurances taken out in the case of a pauper who died in the Prestwich Asylum. Since then it has been discovered that instead of seven the number of insurances on the man's life was 12. This kind of gambling is said to be very prevalent and is illustrated by a case at Bolton where a bankrupt applied at the county court on March 7th for his discharge. He had insured the life of his mother-in-law in three policies and that of his father in two. In this case the speculation failed, for having paid over £873 he was obliged to sell the policies for £160. Judge Bradbury spoke of this betting on the lives of relatives as horrible and disgusting. In this instance there was no suspicion of foul play but in many cases the date of insurance has been a date of ill-omen for the insured, and in the case of infants the fact that pecuniary benefit would follow their death has not tended, among the poor and hard-pressed, to prolong their lives.

An Unsuitable Punishment.

It seems desirable that Mr. Birrell should provide against a danger to health and life from the ignorance of some elementary schoolmasters as to the properties of tobacco. At a West Cumberland elementary school three boys were found chewing tobacco, so the sapient master took it from them, divided it into three parts, and ordered them to chew and swallow it. Two of the boys became violently sick and so far collapsed that they had to be put before the school fire for some time before they were sufficiently recovered to walk home. Though there is a talk about abolishing tests, it might be well to have one to show the candidate's views as to the suitability of tobacco as an article of diet.

The Mossley Water-supply.

It has been matter of common knowledge for some time that lead-poisoning has been very prevalent at Mossley,

caused, it is alleged, by lead in the water supplied by the Ashton and district joint waterworks committee. Fresh cases are continually occurring and the Mossley town council has at length decided that an inquiry by the Local Government Board must be asked for. It is curiously illustrative of a certain class of mind, not infrequently to be found in our municipal councils, whether large or small, that a moderate loss of life and a considerable amount of avoidable disabling illness ought to be put up with rather than that expense should be incurred in taking steps to remove the source of trouble. One member of the town council objected to an inquiry on the ground that it would "lead the town into a lot of needless expenditure." He said that samples of the water showed in two cases infinitesimal quantities of lead and others were declared to be "excellent domestic water," whatever that may mean. Probably it had never occurred to this gentleman to ascertain the cost to the town of the sickness and death caused by a poisoned water-supply or to compare it with that of an inquiry which may lead to the removal of the danger that now constantly threatens. Happily the majority felt that "the health of the people should have the first consideration" and so it was decided to ask for an inquiry.

Fees under the Midwives Act.

A conference of medical men connected with the various medical associations, hospitals, and Poor-law authorities of the city was recently held in Manchester, and it was resolved that a speedy amendment of the Midwives Act, 1902, is called for with a view to settle the question of payment of fees to medical men under the rules of the Central Midwives Board when called in on the advice of midwives. It was also resolved that the Parliamentary subcommittee of the city council should be requested to arrange for the subject to be brought before the Municipal Corporations Association with a view to speedy legislation. It was further resolved :—

That for the present medical practitioners in default of payment by the patient should apply to the corporation under the Public Health Act, 1875, and any other powers the corporation may possess.

At a meeting of the corporation midwives supervising committee on March 2nd, Mr. W. F. Dearden presiding, these resolutions were approved.

A Rochdale Pauper Set on Fire.

An inquest was held on March 12th at Dearneley workhouse, Rochdale, in a case which, on the evidence given, suggests that more care might sometimes prevent tragedies. A man, aged 79 years, who had been an inmate for some time, was being rubbed with methylated spirit by a probationer nurse. Another inmate was assisting her who "did not know the spirit was inflammable." "Owing to the stench" (this inmate must be very sensitive to bad odours) he got leave to smoke to counteract it, "but as he was lighting his pipe the phosphorus fell on Kenny, set fire to the spirit, and the man was seriously burned." The medical officer said that the deceased had been suffering from heart disease, which was the primary cause of death, accelerated, however, by shock. He said also that the nurse's assistant had been helping at such work for two years and if inmates were debarred from it the nursing staff would have to be doubled. It may, it is to be hoped, be presumed that the probationer knew that methylated spirit was inflammable but neither she nor the medical officer appears to have warned the pauper who was helping of the danger and the knowledge was not acquired by this poor fellow, who is really to be pitied, during the two years that he had been "helping at such work." It is surely not too much to expect that ignorant helpers should be warned against special dangers.

The East Cheshire Coronership.

Owing to the death of Mr. Francis Newton an election recently took place of a successor to the office of coroner for East Cheshire. There were 11 candidates, solicitors or barristers, and not one medical man. The gentleman elected, Mr. Ferns, is a Stockport solicitor and an alderman and magistrate for the borough of Stockport. Believing, as most of us do, without any disparagement of Mr. Ferns, that the office of coroner is likely to be better served by a medical man than by a lawyer, it seems unfortunate that there was no medical candidate.

March 13th

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Poisonous Gases in the Forecastles of Ships.

THIS subject has been brought into prominence by the death of a strong, healthy seaman while on a short voyage. The victim slept alone in the forecastle of the vessel, this apartment being heated by a small cooking stove, but the only outlet for the vitiated atmosphere was closed on account of bad weather. The man was known to be perfectly well at 4 A.M. but a few hours later he was found lying dead in his bunk. Dr. W. E. Harker, medical officer to the Tyne port sanitary authority, examined the body and found that death was due to carbon-monoxide poisoning. With the ventilator blocked the forecastle was a veritable "death trap." With sailors it is a common practice in bad weather to close up all the air inlets and outlets of their already too small sleeping apartments, while at the same time a small stove is allowed to burn. If the case serves to draw attention to this danger a very useful lesson will be conveyed to a naturally thoughtless class of men.

Model Nursing Scheme for Tyneside.

Under the title of the "Benefit Nursing Association" a system of home nursing has been in successful operation in some of the fishing villages of North Northumberland, and it is proposed to put it on trial on Tyneside. The association is unsectarian, and it provides cottage nurses who have undergone nine months' training and whose business it is "to make themselves at home in any household, taking their food with the family in every way like one of themselves." Benefit subscribers to the association are divided into three classes to suit the means of the poorest. In Class 1 the annual subscription is 2*s.* and patients in this class are entitled to a nurse at a charge of 3*s.* 6*d.* per week for her services; in Class 2 the annual subscription is 3*s.* and the nurse's fee 5*s.* a week; and in Class 3 the yearly subscription is 5*s.* and the nurse's fee 7*s.* 6*d.* per week. Non-subscribers may obtain the services of the association's nurses, but in their case the fees are higher and the nurses are liable to be withdrawn if needed by members.

Is Hernia an Accident?

Since the advent of the Workmen's Compensation Act there is no disease that has not been supposed to be due to some antecedent accident and coroners' inquiries have become much more frequent in consequence. In the case of a miner, aged 53 years, who was admitted to the Newcastle Infirmary suffering from strangulated hernia, and who died, a certificate of death was granted by the house surgeon and the body was taken away by the friends to the patient's home, a distance of 16 miles from Newcastle. Owing to some suggestion that the condition was due to an accident it was decided to hold an inquest and the body had to be returned to Newcastle. Meanwhile the coroner wrote a strongly worded letter to the house committee of the infirmary complaining of the conduct of the house surgeon who, he alleged, by signing the certificate had made a very serious error. At the adjourned inquest the evidence clearly showed that the man had suffered for some time from hernia and that the alleged accident was in no way responsible for his death. It was also clearly shown that the question of an accident was never raised until after the removal of the body from the infirmary and that therefore the house surgeon had very properly signed the certificate. The coroner informed the jury that when he wrote the letter complaining of the house surgeon's action he was under the impression that the latter knew of the alleged accident.

"Hospital Management: A Warning."

With this title a very outspoken article has recently appeared in the *Newcastle Daily Journal* from an anonymous correspondent. As the new infirmary nears completion all the efforts of the subscription committee have been directed to raising the income by increased levies from the workmen in our large factories and collieries, and it is against this policy that the above correspondent sounds a note of warning. It is not contended that it is wrong to accept a regular contribution from a workman who has been a recipient of the benefits of the institution, but it is strongly contended that such contributions should be entirely voluntary and not in any way of the nature of a "levy."

The writer says: "I admit that this has now become a very complex subject and as I speak from the standpoint of one the greater part of whose life has been spent in active hospital work I have perhaps had better opportunity of seeing the disadvantages of the present scheme and I have also realised that this scheme has now obtained such a hold of hospital managers that unless a sincere effort is made to arrest its growth it will not be very many years before our hospitals are turned into what will be practically *workmen's clubs*." Continuing, the writer traces the history of hospitals in this country and contends that whereas they ought still to administer to the sick and injured poor, whose *only claim* ought to be *sickness and poverty*, they may legitimately be allowed to benefit a class of patient who has come into being during the last 30 years—the man of small means who can pay for ordinary medical attention but whose purse will not run to the length of paying for some necessary operation and the concomitant skilled nursing. By the increasing tendency to the coöperative support of our hospitals by the working men it is becoming more and more difficult for the class of case mentioned to benefit by the charity, for the working-man government of such institutions is further tending to bring them to the level of sick benefit societies, ever ready to administer to their members, but to them only. "I have more than once known patients arrive at the hospital with such an injury as, say, a simple fracture of the arm, and 'demand' a bed for their reception and occupation until such time as they had completely recovered, and because their request was very properly refused their fellow workmen have threatened to stop their subscriptions." As a result of this use of our hospitals as benefit institutions it is contended that it has now become necessary to build large general hospitals supported from the rates in connexion with workhouses for the treatment of the sick poor who should rightly be treated in the infirmaries originally intended for them. In many hospitals the first consideration comes to be whether the applicant contributes his penny a week to the funds of the institution rather than the necessities of his case. "In my opinion, this condition of affairs must cease or of a surety it will be no long time before we have our hospitals entirely converted into workmen's clubs with a majority of workmen on the boards of management." As further bearing on this question it is interesting to note that at the annual court of governors of the Royal Infirmary it was decided to increase their representation by an addition of four working men governors to their number on the committee.

Alteration of the Constitution of the "Staff" of the Royal Infirmary, Newcastle-upon-Tyne.

At a meeting of the house committee held on March 1st the following motion was adopted:—

That the "staff" to whom questions may be referred by this committee or from whom recommendations may be received shall be the honorary physicians and surgeons, the honorary assistant physicians and surgeons, the honorary physicians in charge of special departments, and the honorary pathologist.

This means that the "staff" who form the medical board shall in future consist of the whole of the medical and surgical staff instead of the four full physicians and four full surgeons as heretofore.

Vaccination and Small-pox.

In the report of the medical officer of health to the Willington Quay urban district council it is stated that during 1905 there were no less than 39 cases of small-pox notified. Of this number two were fatal, one male 25 years of age and one female eight weeks old; both were unvaccinated. Of the remainder four were unvaccinated and were all severe cases; the rest had all been vaccinated and were more or less modified, the majority being only slightly affected.

The Fees of Colliery Surgeons in Northumberland.

Since my last note on this question in THE LANCET of Feb. 3rd, p. 341, affairs have moved a step further in that the Northumberland Miners' Association after a discussion lasting four hours has decided by 37 votes to 21 not to abolish the doctors' fees committee, which means that it intends to continue the agitation to obtain the desired reduction from 9*d.* to 6*d.* per fortnight. But though this decision shows that the men's leaders who desire to continue the struggle are in the majority, and there are determined men among them who look upon the success of their side as vital to the interests of the Miners' Association, it does not follow that they will be supported by the general body of miners who now are asked to ratify by ballot the decision of their leaders. There is a deep-rooted feeling among large numbers of the men that this question is outside the scope of the association and that individual collieries ought to be allowed to settle the matter in their own way. In fact, the lack of unanimity displayed by the speakers and the result of the voting at the Miners' Association are but an indication of a much greater lack of unanimity which exists among the men. On the other hand, the medical men are solidly united and at their last meeting it was unanimously decided to continue to resist the attempted reduction. It has been urged by a section of the miners' supporters that this struggle was but the thin edge of the wedge and that the medical men ultimately aimed at making the fee 1*s.* or even 1*s.* 6*d.* per fortnight. This suggestion was not heard of until brought forward by the men themselves and that it forms part of the medical men's programme has been officially denied. Meanwhile, so far as the individual collieries are concerned, the dispute goes favourably for the medical men and in very many districts the miners have unanimously decided to pay the old 9*d.* rate. At Seghill, Ashington, and Throckley other medical men who have agreed to work at the lower rate have been brought in by the men, but already a great many of the miners—at Ashington nearly 50 per cent.—have returned to their old medical men—of course, at the old rate. Nevertheless, those who know the miners' leaders best and who are able to judge of the progress of the dispute say that it is not yet ended and that it behoves all the medical men affected to continue to stand united.

March 12th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Glamorganshire Farm Colony.

DURING the past two years the Poor-law and other public bodies in Glamorganshire have been considering both individually and in conference the question of dealing with vagrants and with the unemployed generally. In January, 1905, an offer was made by Mr. Joseph Fels to place at the disposal of the Poor-law authorities in the county an estate of at least 100 acres for the purpose of establishing a labour colony. This proposal met with considerable favour at the time and was apparently not given effect to only because it was thought that the Government was about to introduce a scheme applicable to the country as a whole. The last conference of public bodies in the county to consider the subject was held in the autumn of last year under the presidency of Mr. Keir Hardie, the Member of Parliament for Merthyr Tydvil. A committee appointed by this conference has now drawn up a report the recommendations of which, it is hoped, will be endorsed by the public authorities concerned. The scheme embodied in the report includes the establishment of a farm colony providing employment for 100 persons who would be housed in buildings built of wood or iron such as are usually erected on large public works where navvies in any great number are employed. These buildings are estimated to cost £1000. The work suggested is that connected with market gardening and the keeping of pigs and cows. The staff proposed for the management of the colony is to consist of a labour master, a matron, and an assistant master, together with a medical officer, the last-named presumably to be a medical man practising in the neighbourhood, for his remuneration is fixed approximately at £40 per annum.

Small-pox in Bristol.

During the present year there have been 14 cases of small-pox in the city of Bristol. Dr. D. S. Davies, the medical officer of health, attributes the whole number to the circulation of infected rags and to the same cause is no doubt due a case which has occurred among the workpeople employed at a paper factory in the adjoining district of Warmley. The outbreak can scarcely be said to be epidemic, a circumstance which is in great measure due to the careful application of means for the prevention of the spread of the disease once its presence is made known. A principal part of the methods employed consists of the search for "contacts" and when

found their vaccination and observation during the incubation period, while lines of possible infection are followed up through personal communication—laundry, pawnbroker, or any other effective agency—as experience or the circumstances of the case dictate. In two recent cases as many as 617 "contacts" were kept under observation. In the years 1893 and 1894 there were notified 365 cases of the disease, but since then, with the exception of the years 1899 and 1900, when not a single case occurred, there have been only scattered cases which have been limited either to the initial case or to one or two offshoots of these.

Abergavenny Victoria Cottage Hospital.

The Abergavenny dispensary was established in 1828 and in 1902 was amalgamated with the cottage hospital which was founded in 1889. The combined institution has accommodation for seven in-patients, and the report for 1905, which has just been issued, shows that there were 89 patients treated in the wards during the year. The committee appears to deplore a falling-off in the number of out-patients treated. The average cost per bed was £79, a proof of economical management. The financial report reveals a balance of income over expenditure amounting to £108.

"Miners' Phthisis" in Cornwall.

In his annual report upon the sanitary condition of the urban district of Camborne the medical officer of health (Mr. J. Telfer Thomas) deals at some length with the incidence of pulmonary tuberculosis in the district. The population of Camborne is 14,726 and has been practically stationary for nearly 20 years. During 1905 the death-rate from pulmonary tuberculosis among the inhabitants other than the tin miners was 1·4 per 1000, about equal to that which prevailed in the rest of England and Wales, but the 18 deaths from the disease which occurred among the miners raised the rate to 2·64 per 1000 of the population. These rates, it appears, do not vary much from those which have been recorded in previous years. Mr. Thomas, who is certifying factory surgeon as well as medical officer of health, states that the great majority of cases among the miners occur in those engaged in rock drilling. He considers that the inhalation of stone dust is the cause of the disease in these men and he thinks that it would be ultimately stamped out if the special rules made by the Home Office were rigidly enforced, a result which can only be achieved if the miners cheerfully coöperate with the officials. As a large proportion of the deaths occur in men who have contracted the disease abroad he suggests that similar regulations should be enforced in the Transvaal and other districts abroad.

Boards of Guardians and the Vaccination Act.

The subject of vaccination has again been engaging the attention of guardians in the West of England. The board of guardians of Camberwell, London, has sent a resolution to various boards of guardians asking them to support a resolution to be submitted to the Local Government Board for the repeal of compulsory vaccination, for placing vaccination officers entirely under the control of the guardians, for paying them by salary instead of by fees, and for giving a longer time in which to obtain an exemption certificate. Most of the boards did not seem to favour the resolution but adopted the course of the Li-keard (Cornwall) guardians who determined to allow the resolution "to lie on the table"; some followed the Kingsbridge (Devon) guardians "who referred the matter to their vaccination committee."

March 13th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Water Scare in Edinburgh.

THE chief sanitary inspector of Edinburgh, Dr. A. M. Williamson, has reported at length on the "water-flea" scare, to which reference was made a few weeks ago. The insect is, in the first place, not a "water-flea" but is known commonly as a "springtail" owing to the power of jumping which it possesses. It was found in a small number of the cisterns examined. It was not carried to the cisterns from the source of supply and there was no defect in the cisterns in which it was found. So far the investigation was negative and satisfactory but the source from which the insect got into the water had still to be determined and it was found that its breeding place was in the street hydrants. These hydrants are mostly of the ball type and the somewhat startling discovery was made that under certain conditions not only the "springtail" but any other contents of the hydrants readily gained admission to the main water-supply. The water in the main pipes could not only be contaminated by street soakage but was in fact being so contaminated. For years the ball hydrants, as they became worn out, have been replaced by valve hydrants which are regarded as thoroughly efficient; but there are still hundreds of the inefficient type still in use. Dr. Williamson suggests that until the faulty hydrants have been replaced steps should be taken to render them safe. The town council proposes to have all the ball hydrants removed in something like three years. Meanwhile the council is looked to to make them so secure that no leakage can take place into them. The sanitary authorities will certainly be supported by the public in insisting upon this being done at once, for while the scare of the water flea has been laid the idea of the city's drinking water receiving street soakage is repulsive in the extreme. That such contamination can be a serious source of danger will not be questioned and the public will doubtless be grateful to the harmless insect that was the means of revealing the greater danger.

Sir William Turner.

Principal Sir William Turner has completed 50 years' connexion with the University of Edinburgh. He came to Edinburgh as a demonstrator of anatomy, he became a professor of that subject, and was for many years Dean of the medical faculty, and a few years ago he was made Principal of the University. In view of this long academic connexion with the University the Students' Representative Council has decided to originate an appeal to the students and general council of the University in order to secure that the occasion shall be marked in some suitable way. A committee was appointed to carry this into effect.

Aberdeen Dispensary: Annual Report.

The total number of cases treated was 12,267, a decrease of 625 as compared with the previous year. The number of ordinary and zymotic diseases amounted to 9290, a decrease of 825. During the year an unfortunate recrudescence of typhus fever took place, no fewer than 18 cases having come under the notice of the medical staff; but there were few cases of whooping-cough and measles, of which an epidemic prevailed in the previous year. Vaccinations and revaccinations numbered 118, a decrease of one, and dental operations 579, a decrease of 26. The special ear, throat, and nasal cases were 570, a decrease of 14. 330 cases of diseases of women were treated, a decrease of 16. In the eye department 930 cases were treated, an increase of 186. The patients treated at home numbered 2856, a decrease of 383, and the number of visits paid was 8441, a decrease of 1297. The number of medical students who paid for admission to the general practice of the institution was 88, an increase of 42. The prescriptions dispensed numbered 47,203, a daily average of over 151. The cost of medicines, exclusive of what was supplied to the Maternity Hospital, was 4409 7*s.* 1*d.*, a decrease of £12 16*s.* 7*d.* The Aberdeen District Nursing Association continues to render most valuable services to the institution, attending 136 cases, an increase of 26, and paying 1905 visits, an increase of 117. The Association for Improving the Condition of the Poor also afforded valuable aid, no less than about 267 of the patients having received aid. The number of cases treated in the Maternity Hospital was 205 and in the homes of the patients 245, a total increase of 71. Of the out-door patients 200 were attended to by the hospital nurses and 45 by the midwives attached to the General Dispensary. The committee of management regrets that during the year the Maternity Hospital lost the very able services of Miss Scott who, with the view of taking up private work, resigned the post of lady superintendent which she had held for over eight years. During that period Miss Scott had carried out her duties to the entire satisfaction of the committee. In filling up the vacancy by the appointment of Miss Alice M. Beedie, a lady who had been for years in Queen Charlotte's Hospital, London, and who had otherwise very high testimonials, the committee was very ably assisted by the ladies' committee and by Professor W. Stephenson. The ordinary income of the Maternity Hospital was £386 1*s.* 3*d.*, and the ordinary expenditure was £642 17*s.* 3*d.*, leaving a deficiency of £256 16*s.* The total debt affecting the General Dispensary and Maternity Hospital, including the balance of

£848 14s. 1d., brought from the previous year's account, now amounted to £1211 16s. 4d., a debt which had been gradually accumulating and was causing the committee of management considerable anxiety.

March 13th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Royal University of Ireland.

THE Senate of the Royal University of Ireland met on March 7th, when a letter was read from the Earl of Meath intimating that for reasons stated therein he had placed his resignation as Chancellor of the University in the hands of his Excellency the Lord Lieutenant. The following motion was unanimously adopted :—

The Senate have heard with great regret that the Earl of Meath has resigned the office of Chancellor of the University, and they take this opportunity of expressing their high sense of the whole-hearted devotion with which he applied himself, during the period for which he held office, to the work of the University and to the promotion of its interests.

A motion, to consider which the meeting was specially convened, was proposed by the Most Rev. Dr. O'Dwyer, Bishop of Limerick, seconded by the Rev. Dr. Hamilton, and adopted :—

That the report of the Royal Commission, in its animadversions on this University as an examining body, indicated truly the essential defect in its constitution, and we believe that its reform in this respect, so as to make it a teaching University with Colleges adequately constituted and brought into organic connexion with it, is a matter of urgent need both for the University itself and for the interests of higher education in this country.

It was ordered that copies should be sent to his Excellency the Lord Lieutenant, the Prime Minister, and the Chief Secretary.

Medical Studentships in Trinity College.

On March 6th an important matter in relation to the regulation of certain trust funds bequeathed to Trinity College by the late Mr. William Chapman Begley, and the codicil of Mrs. Jane Begley, his wife, was adjudicated upon in the Chancery division by Mr. Justice Barton. A sum of £5200 was left in order to establish and endow four studentships tenable for four years to be allocated amongst students of medicine under certain prescribed conditions. It appeared that owing to the extension of the medical course by the General Medical Council since the death of the original testator students entered the School of Physic much earlier in their arts course than formerly and it became necessary to alter the conditions of the trust in consequence. The board of Trinity College was of opinion that the studentships should be open to all students who had passed their final senior Freshman's examination. Mr. Justice Barton said that there would be no difficulty in modifying the scheme as suggested and granted the application. These studentships, in addition to those recently endowed by the generosity of Sir John Nutting, will afford an additional inducement to industrious students of medicine to join the medical curriculum of Trinity College.

Outbreak of Typhus Fever in Ballina.

At a meeting of the board of guardians of Ballina, county Mayo, held on March 5th, the medical officer, Dr. R. Macaulay, reported that there were 23 cases of typhus fever in the hospital from the town besides others not removed. Sir J. Acheson MacCullagh, Local Government Board inspector, has paid a special visit to Ballina in order to induce the local authority to adopt stringent preventive measures.

Benn Ulster Eye, Ear, and Throat Hospital.

At the annual meeting of the friends of this hospital held on March 6th it was reported that the improvements suggested at the previous meeting had been carried out in regard to thorough renovation of the hospital and equipment so as to bring it into line with modern hospitals. During the year 329 patients were treated in the wards (an increase of 56 on the previous year), and in the extern department there were 2045 new cases. Financially the hospital was £140 worse off than it was at the same date last year, but this was owing to the expenditure on equipment and renovation which were urgently needed. The extern operating room is now among the best in the kingdom to be found in eye and ear institutions. The efficient medical staff have now, as one of the speakers stated, all those appliances necessary to enable them to do their work well.

March 13th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Sero-therapy in Paroxysmal Hæmoglobinuria.

AT a meeting of the Society of Biology held on Feb. 24th M. F. Vidal and M. Rostaine communicated the result of some researches which they had made into paroxysmal hæmoglobinuria. These researches went to show that the cause of the outbreak of hæmoglobinuria which is brought about by exposure to cold is due to an insufficiency of a certain antibody (*substance antisensibilisatrice*) in the blood. From results obtained *in vitro* they had been led to inject a certain serum into a hæmoglobinuric patient and had thus been able to prevent an attack of hæmoglobinuria after exposure to cold. In another case in which the patient was excessively sensitive to cold an injection of the serum entirely prevented the onset of an attack of hæmoglobinuria which the patient, a woman, had always been able to bring on by immersion of the hands for 15 minutes in water at 10° C. The serum used came from a horse which had been prepared at the Pasteur Institute by means of an intraperitoneal injection of human serum derived from blood drawn in the course of ordinary therapeutic bleeding or else from placental blood. The serum of the patient broke up blood corpuscles with which it was placed in contact *in vitro* when the mixture was cooled down. M. Vincent, however, working together with M. Dopter and M. Rostaine, found that the serum of patients who suffered from malarial hæmoglobinuria had not this effect. This difference in the action of the plasma from patients suffering from the two kinds of hæmoglobinuria helps to explain the different effects of calcium chloride in hæmoglobinuria from cold and from malaria. It will prevent an attack of the latter but not of the former.

A Method of Measuring the Amount of X Rays Given Off in a Given Time.

On Feb. 19th M. Gaiffe gave an account of a method for measuring the amount of x rays given off in a given time. His idea is to interpose between the source of the rays and a fluorescent screen which is able to be destroyed by the action of the rays one or more shutters of an aradiochroic substance which is unequally transparent to the rays. The portion of the screen which is not protected by these shutters is rapidly altered, while the parts of the screen which are covered by the shutters are altered more or less slowly according to the degree of transparency to the rays of the shutters.

Radiography in Fracture of the Thigh.

At a meeting of the Surgical Society held on Feb. 28th M. Monod showed a radiograph of a fracture of the thigh which had been treated by Hennequin's apparatus, the apparatus having been applied by M. Hennequin himself. The radiograph showed that although functional result for the patient had been extremely good and that there was only a shortening of two centimetres there was considerable riding of the two fragments of the femur. This case shows how necessary it is to be on guard in receiving the declarations of certain patients that after fracture of the thigh, however carefully it has been treated, they are unable to walk except very badly while they pin their faith to a radiograph which may show marked riding of the two ends of the bone. This case, however, proves that even very considerable riding is not incompatible with excellent functional powers. M. Delbet, who spoke next, remarked that this photograph showed once more how the apparatus of Hennequin, like most other apparatus, could not pretend to bring about absolute reduction of the fracture so that the bony fragments were end to end. With one radiogram simply the reduction might appear perfect but one taken in another plane would always show the existence of riding of the bone more or less marked.

Intestinal Infections treated by Altering the Bacterial Flora of the Intestine.

At a meeting of the Society of Biology held on Feb. 24th M. Tissier proposed a method of treating intestinal infections by replacing in the intestine the harmful microbial flora by another kind which was inoffensive as regards the organism. The treatment began by placing the patient upon a strict vegetarian diet and during the course of the day a bottleful of water containing from 20 to 50 grammes of milk sugar was given. Finally, one or two glasses of Bordeaux wine were given containing a pure culture of the bacillus acidi

paralactici or a symbiosis of this variety of bacillus with the bacillus bifidus. After some days of this treatment the stools lost all their fœtid smell and it was possible to see with the microscope the progressive multiplication of an inoffensive bacterial intestinal flora. If the treatment was continued for two and a half months or so the bacterial flora of the intestine would be found to be almost entirely transformed and then the diet might be made slightly less strict.

The University of Paris.

Sundry foreigners, Doctors of the University of Paris, have recently petitioned that body to allow them to wear upon ceremonial occasions in their own country some distinguishing mark which should let people know that they possess the degree in question. The council of the University has just decided that foreigners who are Doctors of the University shall be henceforward authorised to wear, in addition to the academical dress of any foreign university to which they may belong, the *épitoge* with three rows of ermine, which is part of the academical dress of the University of Paris.

March 10th.

ITALY.

(FROM OUR OWN CORRESPONDENTS.)

Importation of Medicinal Substances and Compounds into Italy.

A VERY important change is pending in regard to the importation into Italy of drugs from abroad. The Department of Sanitation has issued a circular warning importers that the present system of unrestricted importation will cease at the end of the current year. The reasons given for the change are the great and ever-increasing importation of foreign drugs, the impossibility of exercising an efficient control on the manufacture of foreign preparations, and the abuses and resulting inconveniences and dangers which are said to have arisen from the introduction by unscrupulous speculators of inferior and adulterated products to the detriment of the public health. It is therefore intended to put rigorously in force Article 14 of the Tariff Law of Nov. 24th, 1895, No. 629, which prohibits the importation of all medicines and medicinal compounds not approved by the Superior Council of Hygiene. After Jan. 1st, 1907, the introduction into, and sale of drugs in, the kingdom will no longer be allowed without the previous consent of that council, the approval of which may, however, be obtained by those interested by means of a formal application to the Minister of the Interior.

Behring's Method of Immunisation against Bovine Tuberculosis.

In the early part of last year a series of experiments was instituted at Mortara, under the direction of Professor Mazzini of the Veterinary School of Turin, with the object of testing the value of Behring's method for immunising cattle against tuberculosis. The results of these experiments have been uniformly successful, but in order to make the method more widely known and to call more attention to its importance the last five of the immunised cattle were taken a few days ago to the Sero-therapeutic Institute of Milan and there slaughtered in the presence of a large number of persons interested. In only one of the five were tuberculous lesions encountered and in this one some cicatrices were found due probably to tubercle which had developed during the course of the experiments but which had evidently shrivelled up under the influence of the remedy. The necropsy of one of the oxen was anticipated with special interest because of the great amount and virulence of the immunising material which had been employed in its case, and which under ordinary conditions must after so many months have developed a general tuberculosis. On the contrary no trace of tubercle was found in this particular animal. A sixth animal, intended to serve as a "control," had received injections of tuberculous material without previous immunisation. The necropsy in this case revealed lesions which bore the naked-eye characters of tubercle. A telegram was despatched to the Sanitary Department at Rome and to the Minister of Agriculture and Commerce informing them of the results of the experiments and requesting Government aid for a further prosecution of the experiments in Milan.

Pellagra in the Province of Rome.

At a meeting of the Pellagra Commission for the Province of Rome held recently it was stated that two new centres of infection had to be added to the four already existing in the district, pellagra having broken out in the communes of Palestrina and Cave. The number of pellagrous persons in the six communes which have now to be subsidised under the Act totalled about 180. Fortunately the cases were not very grave and might be easily dealt with but for the ignorance and suspicious attitude of the population, the apathy of the local authorities, and in some cases the deliberate opposition of certain persons to the formation and activity of the local committees. Only in the commune of Onano, the most afflicted of all, a commune, moreover, without agricultural or other resources, were the importance and utility of the campaign against pellagra appreciated and the efforts of the Commission seconded with intelligence and alacrity. Here the number of pellagrous persons was reduced by 75 per cent. and the severity of the disease was greatly mitigated, while the maize desiccator, the baker's oven, the sanitary arrangements, and the coöperative store were all working admirably. In the commune of Piglio, on the contrary, the desiccator supplied by the Agricultural Department could not even be set up, for no one was willing to furnish a site for it either gratuitously or for hire. All that could be done was, with the help of the "medico condotto," to distribute good bread to the patients. At Arcimazzo a desiccator had been installed but not the oven, and as to Ripi no information was obtainable from the local committee in regard to the progress of the measures recommended by the Commission. The difficulties encountered in the province of Rome are not greater but rather less than those met with in other districts where the incidence of pellagra is much heavier. The Pellagra Act of July 21st, 1902, and the Ordinance of Nov. 3rd, 1903, make provisions which, if only faithfully carried out, would prevent any fresh outbreak and in time entirely stamp out the disease. The State contributes through the Minister of the Interior and the Agricultural Department about 300,000 lire (£12,000), one-third of which sum is divided by the former into subsidies for the various pellagrous institutes, the balance being used by the Minister of Agriculture to encourage institutions of an economic or preventive kind, or to stimulate improvements in practical agriculture—as, for instance, the substitution of the ordinary maize crop by leguminous or forage crops. The chief pellagrous institutes are those of Mogliano Veneto, Città di Castello, and Inzago, Milan. Each of these forms a kind of agricultural colony of which those well enough to work are given practical instruction in agricultural operations. There are also institutions for the pellagrous at Ponton (Verona) and at Sanseverino Marche, but these are of minor importance. The greatest difficulty in the way of the prevention of the disease is the importation from abroad of unwholesome maize. Hitherto a 5 per cent. admixture of damaged grain has been allowed but the Commissioners feel that there should be no tolerance of diseased maize and now demand the strict application of the law which forbids the introduction of diseased or immature maize and recognises no percentage of tolerance whatever.

Death of Professor Pasquale.

By the death of Professor Pasquale early in January last Rome has lost a teacher who has been at the head of its Obstetrical School for 30 years and who, indeed, may be regarded as its founder. Originally a surgeon in the Roman hospitals, he accepted the chair in the Obstetrical Clinic instituted in 1865 by Pius IX., in succession to Panunzi, and continued in occupation of it until his death at the age of 81 years. Although a man of industry and devoted to his specialty he has left behind him no writings of importance, having been content to record the results of his large experience in the form of fugitive contributions to medical societies and journals from time to time. Of late, while his advanced age rendered it impossible for him to discharge satisfactorily the duties of his chair, his activities were restricted chiefly to his hospital work at San Giovanni and at the University Obstetrico-Gynæcological Clinic. He also took part in planning the beautiful obstetrical department in the new Policlinico which he has not lived to see finished and the completion of which now falls into the very competent hands of his successor in the chair, Professor Pestalozzi of Florence, whose appointment (already confirmed) gives universal satisfaction.

A Garibaldian Sister of Mercy.

The week now closing has witnessed two ceremonies that have concentrated on Florence the mind and soul of Italy,

the centenary of the birth of Elizabeth Barrett Browning and the funeral obsequies of Jessie White Mario. Both had made the Tuscan capital their home, both died there after a life dedicated to Italy, and both will keep their place in all Italian hearts till Italy herself shall have ceased to be. Mrs. Browning was the poetess of the "Risorgimento," and her verse, now pathetic, now exultant, now blending both moods in beautiful harmony, is hardly more familiar to the English-speaking world in the original than to the Italian in translation. Appropriately, therefore, on March 6th, her birthday, at the Casa Guidi, her residence, both nationalities met in common sympathy to place a wreath upon the tablet that commemorates her life and work. Hardly was that ceremony over when Mrs. Browning's friend, the Signora White Mario, passed away, closing a life which was itself a poem translated into action. Drawn to Italy in the early "fifties" of last century Miss White soon found the efforts of young Italians for their country's unity and independence more thrillingly attractive than the literature and art of her early predilection and in Genoa, where she met her future husband, Alberto Mario, she became the friend of Agostino Bertani, the brilliant young surgeon, with whom she was thenceforth to be associated as chief nurse on the medical staff of their leader Garibaldi. After the crushing defeats of Magenta and Solferino the Austrian Kaiser came to terms with the Emperor Napoleon and Victor Emanuel at Villafranca, but that half-hearted treaty had no effect in curtailing the now triumphant policy of Cavour, while, much to the Emperor's chagrin, the revolutionary wave set strongly southwards with Garibaldi and his "Thousand Redshirts" on its crest. In the two Sicilies from the day of Marsala to that of Volturno the Signora Mario was as fearless in relieving the wounded under fire as she was indefatigable in tending them in the ambulance, gaining experience from field to field under the eye and inspiration of Bertani, his clear, precise instruction effectively reinforcing her "*sagacité de cœur*." In March, 1861, Italy's independence was proclaimed but her unity still required the absorption of the Venetian territory, and again in 1866 Victor Emanuel took the field—this time with Prussia as his ally. Coöperating in the Tyrol with the regular army, confronting Austria in the plain, Garibaldi repulsed the Kaiser's troops at Bezzecca, where again the Signora Mario, now a well-trained nurse, assisted Bertani and his young medical recruits in relieving and tending the wounded. The cession of Venetia to Italy left but the Patrimony of St. Peter to round off her unity. Garibaldi, on his own account, made the raid upon Rome, which was checked by the French "chassepots" at Mentana. In those days of defeat and disaster the Signora Mario was active, not only in ambulance and hospital but as an envoy between Garibaldi and the Vatican, effecting exchanges of prisoners between the two camps and giving evidence of qualities hardly less characteristic of the man than of the woman. At last the dark day of Mentana was avenged. The Emperor Napoleon succumbed at Sedan, the French garrison at Rome was replaced by the Italians under Cadorna, and the flag of United Italy was hoisted on the Capitol. France, now a Republic, claimed all Garibaldi's sympathies, over-run as she was by the victorious Germans. Marching with his Redshirts to her aid he won, over General von der Tann at Dijon, the single victory that relieved the long tale of French defeats and, again, he had the Signora Mario to thank for skilled and intrepid assistance on the field and in the ambulance. With the close of the war and the cession of Alsace Lorraine the knight-errant and his Sister of Mercy returned to Italy and there, at the instance of the Senator Pasquale Villari (the historian of Savonarola and Macchiavelli), she threw herself into another and hardly less arduous campaign—that of rescuing and rehabilitating the "lapsed masses" in the great Italian towns, especially Naples. Taking as her motto "Res Sacra est Miseria," she made the round of the Neapolitan prisons, the court-and-cellar population, the destitute, vicious, criminal proletariat of that seething hotbed of misery, undeterred by an epidemic of typhoid fever then making havoc of its people. All this beneficent work she has told in a volume of thrillingly pathetic interest entitled "La Miseria in Napoli"; but the work was already sapping her splendid constitution and she was called away to Rome to join her husband now in the first stage of malignant disease. One by one her old companions-in-arms had dropped, or were dropping, away. Garibaldi and Bertani had gone to their rest and she laid an *immortelle* on the tomb of both in her deeply interesting biographies of each. Then her husband died, closing a life as brilliant in literature as it was romantic in war, after which, for the later years of her life, she made Florence her home. Never affluent—her husband's impoverished estate at Lendinara affording her little more than a humble *pied-à terre*—she earned a hard-won livelihood by teaching English, as lady professor of that language and its literature, at the Circolo Filologico. Still her pen was active and she drew largely on her past contributions as correspondent to the *Daily News* for material to be wrought up into volumes—of biographical and historical interest—on the epoch-making times she had lived through. Some of these have already seen the light and will always be consulted by the student of Mazzini's propaganda and Garibaldi's campaigns. But the series is incomplete; the materials only are available for later hands "to crown the edifice" of the undertaking. For within the last year her strength had been visibly on the wane till, as the result of a nobly inspired but fatal struggle to meet her teaching engagements, she succumbed to pneumonia on March 6th, in her seventy-fourth year. All that was most distinguished in Florence, of every shade of party, was gathered together at her funeral, and before her cremated ashes were consigned to their destination beside her husband's at Lendinara, an eloquent and deeply touching *oraison funèbre* was addressed to the assembled mourners by her old friend, the Senator, historian, and statesman, Pasquale Villari.

March 12th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Increase in the Number of Medical Students.

THE constant fall in the number of medical students, which was a marked feature of the university reports for the last seven years, has ceased and is now replaced by a rising tendency. According to the figures published by the Ministry of Education in the winter semester of 1905-06, which terminates in March, there were 3133 students matriculated in all the seven medical universities of Austria, being an increase of 141 students as compared with the figures for the preceding year. The chief cause of this increase is the fact that a large number of foreign students and ladies have attended the courses. The number of graduates taking the degree of M.D., with which the medical curriculum is finished here, is still constantly declining, not only on account of the reduced number of medical aspirants but also because medical study is being relinquished by more young men than formerly for the sake of civil service appointments or commerce.

Medical Attendance on Members of Parliament.

The present Parliament, which is nearing its end, includes nine medical practitioners amongst its members; moreover, the present Speaker of the House, who is here called the President, has been a very active medical student and is well known in the wards of the General Hospital. As members of the House have several times been seized with fainting fits and other illnesses during prolonged sittings, these nine gentlemen have formed a sort of medical league within the Parliament. Hitherto it had not been deemed necessary to make arrangements for any medical service at all but the help rendered by the small number of professional men has been appreciated in such a degree that perhaps the legislators will now give more attention to the wants of our profession. An unexpected episode in connexion with this subject is that the surveyor of taxes has claimed a certain amount in respect of a small dispensary which has been fitted up for the use of the members in case of need, but there is no probability that this tax will be paid.

A Unique Case of Cystic Disease of the Parotid Gland.

At the last meeting of the Vienna Medical Society Professor Politzer showed a man who had sought advice at his out-patient department on account of earache. Whilst he was being examined some liquid viscid discharge came out suddenly from the meatus externus and the patient declared that he felt much better. As the discharge continued for months he returned to the clinic, when it was noticed that on making pressure behind the mandible or

during the acts of eating or mastication a clear serous liquid came away in large drops from the meatus. There were no other symptoms of subjective discomfort but the discharge was very troublesome when the patient was in company. Examination with the otoscope and tuning-forks gave normal results. In the meatus osseus there was a small depression which led to a canal directed towards the parotid gland. Pressure on the preauricular region caused the appearance of liquid in the depression. The chemical examination of this liquid proved it to be saliva, capable of inverting sugar. Professor Pollitzer's opinion of this unique case is that a cyst of the parotid gland had perforated the thin layer of bone so often met with in this region when ossification is deficient. Operation was not advisable, as it was highly doubtful whether the cyst had any communication with Stenson's duct.

Elephantiasis of the Leg.

At the same meeting Professor von Eiselsberg showed a leg affected with elephantiasis and enormously enlarged. It had been removed by an operation from a man, 24 years of age, who had been ailing since his fourteenth year and had been obliged to sit very much as his left leg became so weak and enlarged that he could not move about. For the last three years he had been confined to bed. His face was very pale and marked leucocytosis was present. The x rays showed a dislocation of the hip-joint, diastasis of the knee and absence of the lower half of the tibia and fibula. The tarsal and metatarsal bones were only fragmentary. As an operation was urgently requested by the patient amputation through the hip-joint was performed but he died soon after it. The limb weighed 46 kilogrammes (100 pounds) and sections through its substance showed the absence of muscular tissue, beginning from the middle of the calf. There were large cavities filled with lymphoid liquid present between the different layers of the former muscles. Microscopic sections showed only hypertrophy of the connective tissue. Elephantiasis is very rare in European countries and the cause of the cases which occur is not definitely known, but in tropical regions certain parasites are responsible for the disease.

A New Operation in Degeneration of Nerve Trunks.

Dr. Gersuny has suggested a novel way of obtaining compensation for loss of function of certain motor nerves by suturing the muscle, the nerve of which was destroyed, to another muscle having a different nervous supply with the object of bringing about innervation of both muscles by one nerve. A man who had suffered from acute pain in the left shoulder-joint had slowly but steadily lost control over certain movements of the arm, so that after five months he was unable to lift it. The galvanic and faradic reactions of the circumflex nerve showed that it had undergone total destruction (neuritis?), so that the deltoid muscle was rendered useless. Dr. Gersuny in the operation exposed the deltoid and trapezius, muscles by a long incision from the side of the neck over the acromion down to the arm. The insertions of the trapezius and deltoid on the scapula were divided, the deltoid was pushed underneath the trapezius, and they were fixed together by strong sutures. After the closing of the wound in the skin, the arm was bandaged at a right angle to the thorax in the position of abduction and two weeks after the operation the arm was subjected to the faradic current; massage and active and passive movements were soon applied and after three months the patient could lift his arm well. Seven months after the operation the arm could be as easily moved and used as the sound one. The deltoid muscle contracted with the trapezius but the circumflex nerve did not respond to faradic irritation. The contraction of the deltoid was normal by voluntary action. The application of an electric current caused only a slight contraction. The spinal accessory, or eleventh cranial, nerve had therefore partly replaced the circumflex nerve in its action.

March 12th.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

Epidemic Cerebro-spinal Meningitis.

THIS disease is rare in Egypt though it is sometimes met with in the Soudan and is said to have been the cause of the Mahdi's death. Curiously enough, last spring, at the very time when epidemics were occurring in Germany and also at Boston and New York, there were several sporadic cases here. Six adults and three children were admitted to the infectious hospital near Cairo, all being prisoners from three different prisons; four of them died and presented typical post-mortem appearances, while Dr. Dreyer, for the first time in Egypt, found the diplococcus by lumbar puncture in all nine patients. At the same time there were several cases in the Egyptian army and two others were admitted into the German hospital here. An additional patient, a Greek boy, aged six years, showed symptoms which were thought by several medical men to be due to cerebro-spinal meningitis. Arrangements were made for lumbar puncture to confirm the diagnosis, when it was reported that the boy had passed an ascaris lumbricoides in his fæces. Santonin was therefore administered, 39 ascarides were expelled per rectum, and the nervous symptoms immediately disappeared.

Relapsing Fever.

This disease used to occur in epidemic form in Egypt every spring sometimes with and sometimes without typhus fever. But now, though typhus fever is still present in some of the villages, relapsing fever is never discovered in spite of repeated blood examinations. Five Turkish soldiers recently suffered from it but they were all imported cases. Possibly the constant disinfection against plague has in some way lessened the number of bugs and made the conveyance of the relapsing fever spirillum more difficult.

Students on Strike in the Government Schools.

Some disaffected students in the Law School, egged on by professional agitators, threatened this week to leave the school unless all their demands were complied with. The Government has agreed to inquire into their grievances and to redress them if necessary but in the meantime four youths have been expelled and their comrades are in a very excited state. The scholars of the Agricultural College joined in the strike out of sympathy and that school has been closed till next October. The medical students threatened to join the malcontents though they freely confessed that they had not a single grievance, but I am glad to say that I saw them all hard at work yesterday and wiser counsels seem to have prevailed among them.

Abscess of the Liver among the British Troops.

By the courtesy of the principal medical officer I have had the opportunity of compiling some statistics relating to diseases of the liver in the army of occupation during the ten years 1895–1904. The troops in the command averaged during those years a strength of 4415, three quarters of whom were in the Cairo command, while the remainder were divided between Alexandria, Khartoum, and Cyprus, where there is a detachment of about 100 men. The annual admissions for abscess of the liver varied from two to eight, giving an average of 4·6; all except two were operated on and the high mortality of 56·5 per cent. resulted. The ages of the fatal cases varied from one of 19 to another of 40 years. No cases were recorded among the officers, women, or children. The statistics of dysentery for the ten years gave 429 cases of this disease treated in Cairo, 333 in Alexandria, and 37 in Khartoum (six years only). During the year 1898 the cases were trebled in consequence of active service in the Soudan. The English regiment now stationed at Khartoum during the whole year continues to enjoy great freedom from sickness.

Port Soudan.

The harbour has now been officially opened 35 miles from Suakim and a new railway exists connecting for the first time the Nile and the Red Sea, making a route 900 miles shorter than the old journey from Berber to the Mediterranean. It was laid in 14 months at a cost of £4250 for each of the 331 miles of main line. All the water for the working parties had to be conveyed in special tanks, distilled from the sea. The new town which will quickly spring up is to be dependent on well water and is to have a drainage system.

The Egg Industry.

Every year between November and March some 70,000,000 eggs are exported from Alexandria to London, Liverpool, Glasgow, or Hull, besides 3,000,000 or 4,000,000 which go to France, Austria, and other countries. This export trade has been gradually growing during the last ten years, though the fowl cholera of last winter checked it very seriously. Now, fortunately, the epidemic seems to have collapsed. The eggs for shipment are mostly bought in Upper Egypt from the incubating rooms which have been

in use in this country for hundreds of years. As the eggs are very stale before they leave Alexandria it is surprising that merchants should be able to sell them on arrival in England and Scotland, but apparently any egg is considered good enough for cooking purposes.

Cairo, March 4th.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

A Humane Enactment.

A LAUDABLE decision has been arrived at by the prefecture of the Ottoman capital with the view of protecting horses from misuse and ill-treatment. The Turks are on the whole very kind to animals and shield them from injury by every possible means. At almost every Turkish house in Stamboul there is to be found a small receptacle where water is poured in every day for the use of the innumerable street dogs. A Mussulman, building his dwelling place, rarely forgets to attach some contrivance for sheltering birds, pigeons, sparrows, &c. I am assured that a cabman who overruns a dog, heedlessly enjoying its *dolce far niente* in the middle of the street, has to pay a fine of several piastres, while the Sultan is believed to spend a large sum on the feeding of the numerous canine scavengers around his kiosks and palaces. There are, however, a good many employers of horse labour who use their animals in a cruel or thoughtless manner. To prevent this the employment of senile, debilitated, or diseased horses has been forbidden. Municipal agents will have difficulty in Constantinople in insuring that the measure is strictly adhered to—that the load never exceeds the amount proportionate to the horse's strength, and so on—but anyhow the spirit which has influenced the new enactment is laudable.

The System of Sewage and Rats.

The system of sewage of the Turkish capital is far from being satisfactory. Especially is this the case in the suburbs, where it is not a rare thing at all to find drains quite open and emitting a pestiferous stench. The ventilation of sewers in Pera and Stamboul is effected by open gratings in the streets. The "flushing" being imperfect, the escape of evil smells is unavoidable. Frequently also another serious trouble is added. As the cross-bars of these gratings are not sufficiently close to one another rats, which are found there in large numbers, come out unhindered and infest houses and shops. The local newspapers have lately drawn the attention of the authorities to the fact that in some quarters of Galata and Pera rats could be seen in rather alarming numbers moving freely about in the streets at night-time. These rodents can become, of course, a source of danger to the health of the general public. The Imperial Medical School of Constantinople has communicated a note to the prefecture of the city advising that immediate and efficient steps should be taken to prevent the continuance of the evil and the calamity that may easily follow. It is also urgently recommended in the same official note that antiseptic liquids should be poured at intervals into the ventilation holes of the sewers.

The Imperial Society of Medicine.

The jubilee meeting of the members of the Imperial Society of Medicine took place last week, when Dr. Antonacopoulo delivered an account of the labours of the society. The president, Dr. Stékoulis, proposed the election of four honorary members, three from among medical men in Europe and one from among the local authorities. The proposal having been agreed to, Dr. Djémil Pasha was chosen on the spot for local honour.

A Bequest of 50,000 Turkish Pounds for a Hospital.

A wealthy Armenian lady residing at Venice, Mme. Durouhi Yghlikdjian, the daughter of a former cashier of the Imperial Ottoman Mint, has sent a donation of 50,000 Turkish pounds (about £45,000) for the Armenian-Catholic Hospital St. Jacques of the city quarter Pancaldi.

Earthquakes in Malatia.

The correspondent of the *Levant Herald*, a Franco-English newspaper published in Constantinople, sends very alarming news from Malatia, the ancient Melitene of Cappadocia, a town of Kurdish Armenia in the vilayet of Diarbekir. The neighbourhood of this beautiful city, he says, has been visited by a seismic catastrophe with most destructive results. A number of villages surrounding Malatia have been nearly completely destroyed by a violent earthquake of long duration. It is not the first time that this part of Turkey has suffered from such calamities.

Two Sisters who are Centenarians.

During the last census taken in Uscub, Macedonia, two sisters who are centenarians have been discovered, one being 113 years old and the other 100 years old. Both are in good health.

March 10th.

Obituary.

HENRY MATTHEWS TUCKWELL, M.A., M.D. OXON., F.R.C.P. LOND.

Dr. Henry Matthews Tuckwell who died recently at Oxford was a native of the city, his father having for many years been one of the leading medical men there. Educated at Bromsgrove School under the late Canon Collison, he passed thence to Lincoln College, taking a first class in natural science in 1856. After leaving Oxford he studied medicine at St. Bartholomew's Hospital and obtained his qualification to practise in 1858. A year later he won a Radcliffe Travelling Fellowship and continued his medical studies at Paris, Berlin, and Vienna. In 1866 he was appointed physician to the Radcliffe Infirmary, which post he held for 20 years. With such a training and possessing as he did a most courteous and sympathetic manner he quickly acquired a great reputation as a physician and for many years enjoyed a large consulting practice in Oxford and the neighbourhood.

It was in the very prime of life and at the most successful period of his career that a great misfortune overtook him, for in 1886 he suddenly found that he was developing glaucoma and was advised immediately to give up all work. His retirement from practice in such circumstances was the occasion for all the medical men in the district and his old teachers and friends at St. Bartholomew's Hospital to present him with a testimonial as a mark of their sympathy and esteem. It took the form of a beautifully illuminated address and a gold chronometer. The address bore many interesting signatures—such as those of Sir George Burrows, Sir James Paget, Dr. J. Andrew, and Sir William Savory—and was much valued by Dr. Tuckwell. Keenly interested in the advances in his profession, busily engaged in an extensive and interesting practice, to be suddenly debarred from all work and from the consolation of his books, must have been a heavy burden indeed to bear. His friends, however, never heard one word of complaint pass his lips and he appeared always cheerful and contented. Indeed, he set a noble example of Christian patience and resignation to all around him. His great love of music was a source of immense consolation to him and fortunately Oxford afforded him ample opportunity of indulging it. In his earlier years at Oxford a good deal of his leisure time was spent in drawing up a most admirable description of the pathological specimens of the van der Kolk collection which had been purchased for the University. He also contributed several articles of great interest to the various medical periodicals, notably one to the St. Bartholomew Hospital Reports on the Probable Connexion of Chorea with Embolism.

THOMAS DUDDINGSTON WILSON, M.A., M.B. EDIN., F.R.C.S. EDIN.

Dr. Duddingston Wilson died at his residence at Newington, Edinburgh, on March 8th from pneumonia after an illness of about nine days. The intimation of his death was a shock to a large circle of friends in Edinburgh, for his illness was not generally known. Dr. Wilson was widely known in Edinburgh from the prominent place he took in politics. He was for years chairman of the South Edinburgh Unionist Association. His father was a well-known practitioner on the north side of the city 30 years ago. The son graduated in medicine at the University of Edinburgh in the year 1875, having already taken his degree in arts. He was out of Edinburgh for a number of years but returned in 1883 and began practice on the south side in the district of Newington. He gathered a considerable family practice

and was much liked and valued by his patients. He was kind and liberal to the poor and ever ready to give them his professional help. As a man he was straightforward, genial, loveable, and cultured and the profession in Edinburgh is the poorer by his death.

THOMAS EDWARD WILLIAMS, F.R.C.S. EDIN., M.R.C.S. ENG., L.S.A., J.P.

Mr. T. E. Williams died at his residence, Aberenig, Talgarth, Breconshire, on March 7th. The deceased received his medical education at St. Bartholomew's Hospital, taking the qualifications of M.R.C.S. Eng. and L.S.A. in 1863. He was admitted a Fellow of the Royal College of Surgeons of Edinburgh in 1889. Mr. Williams had been in practice for many years in Talgarth, where he was highly respected. He visited patients on March 6th and died on the following day from syncope. His sudden death will be a great shock to a very large circle, by whom he will be sadly missed, not only as an exceptionally able medical man with a high sense of his professional responsibilities but as a sincere and warm-hearted friend. Large as his practice was, he yet found time for public duties unconnected with his profession. he was a good all-round sportsman, a lover and an excellent judge of horses, and in every sense a country gentleman. Although he had been in ill-health for some years before his death, yet his high sense of duty and his devotion to professional and public work led him to continue to do his utmost with unabated zeal and in his desire to benefit others he minimised his own troubles and sacrificed his own health. He leaves a widow, a daughter, and four sons, two of whom are members of the medical profession.

JOHN DAVIES JAMES, M.R.C.S. ENG., L.S.A., J.P., D.L.

Mr. J. D. James died at his residence, the Grove, Blackwood, Monmouthshire, on March 4th, in his seventy-third year. He obtained his professional training at St. Bartholomew's Hospital and became qualified as M.R.C.S. Eng. and L.S.A. in 1857. In the same year he commenced practice at Blackwood and after achieving a reputation as a skilful practitioner retired from active work in 1890. Mr. James took a great interest in all matters connected with the county of Monmouth. He was placed on the commission of the peace in 1869. In 1871 he was elected a member of the first Bedwellty school board and for 18 years served in this position. He was elected an alderman in 1903. In 1897 he became chairman of the Bedwellty division of county magistrates. He was also deputy lieutenant for the county of Monmouth. Mr. James was highly popular and was well known for his benevolence. He was a keen sportsman and was formerly one of the boldest riders with the hounds in Monmouthshire.

JOHN HUNTER, M.B., CH.B. ABERD.

Dr. John Hunter, assistant to Dr. L. B. Beddie, Fraserburgh, died on the forenoon of March 6th at the residence of the latter in Saltoun-place, Fraserburgh, death being due to acute pneumonia, resulting from a severe chill contracted about a week previously. The deceased, who was only 24 years of age, was a son of Mr. Stephen Hunter, manager of the Northern Agricultural Company, Aberdeen. He graduated at the University of Aberdeen two years ago, and after serving for a period in the Aberdeen Royal Infirmary he went to assist Dr. Beddie in November last. Dr. Hunter, though a young man, soon gained the confidence of the patients, while in a social capacity he was also well known in the district.

HEALTH OF TORQUAY.—Dr. T. Dunlop, the medical officer of health of Torquay, in his annual report for 1905, states that the birth-rate was 15·4 per 1000, against 15·7 in 1904. The death-rate was 13·9 per 1000, exactly the same as the previous year. The infantile mortality was 95 per 1000, compared with 120 per 1000 in 1904. Dr. Dunlop states that Torquay enjoys an excess of sunshine during the winter months over most health resorts and the other special features of the climate are equability of temperature and dryness of the air.

Medical News.

UNIVERSITY OF LONDON.—At the intermediate examination in medicine held in January the following candidates were successful:—

Eileen Elizabeth Allen, London (Royal Free Hospital) School of Medicine for Women; Malcolm Edward Ball, Guy's Hospital; Frederick Michael Bishop, St. Bartholomew's Hospital; Herbert Orpe Brookhouse,*† Guy's Hospital; John Philip Buckley,† University of Cambridge and Victoria University; Arthur Laurence Candler,† St. Bartholomew's Hospital; Bernard Arthur Cheadle, St. Thomas's Hospital; Joseph Harry Clarke, St. Mary's Hospital; Ernest Neville Cook, University College; Ethel Constance Cousins,† London (Royal Free Hospital) School of Medicine for Women; Lawrence Croft, Guy's Hospital; Aston Ridley Dale, King's College and Westminster Hospital; Arthur Davies, Westminster Hospital; Trevor Berwyn Davies, University College, Cardiff; Newton Charles Davis, St. Bartholomew's Hospital; Canut Deuntzer, Middlesex Hospital; Ethel Adelaide Douglas, London (Royal Free Hospital) School of Medicine for Women; Evan Parry Evans, University College, Cardiff, and London Hospital; Thomas Evans, Guy's Hospital; William Vincent Field, London Hospital; Josephine E. L. Griffiths and Ethel Margaret Eades Hall, London (Royal Free Hospital) School of Medicine for Women; George Blenkhorn Harland, University of Durham; William Roberts Harris, St. George's Hospital; Frederick Whewell Hogarth, Guy's Hospital; Sidney Ernest Holder, University College; Kenneth Hill Hole and Habibmia I. Janmahomed,†‡ Guy's Hospital; David Judah, University College; Arthur Norman Leeming, Alfred Everard Lees, and Herbert Cubitt Lucey, Guy's Hospital; Edmund Garvin Mack, University College; Claude Herbert Marshall, Guy's Hospital; Edward Kenneth Martin, University College; John Birch Martin and Howard Edward Hall Mitchell, Guy's Hospital; Max H. Edward R. Montesole, St. Thomas's Hospital; Mark Alleyne Nicholson, London Hospital; Owen Brynog Parry, St. Mary's Hospital; Mary Elizabeth Parsons, London (Royal Free Hospital) School of Medicine for Women; Eustace M. Parsons-Smith, St. Thomas's Hospital; Philip Seymour Price, Guy's Hospital; Thomas Edwin Pryce, University College; Douglas Reynolds, Guy's Hospital; Rowland Waters Rix, St. Thomas's Hospital; Mabel Russell, London (Royal Free Hospital) School of Medicine for Women; Arthur Frederick Sanderson, St. Thomas's Hospital; Harold Willis Scawin, St. Bartholomew's Hospital; John Edward Scudamore and Frank Standish, London Hospital; Tom Stansfield, Guy's Hospital; Horace Elliot R. Stephens,†‡ Victoria University; Kenneth Henry Stokes, University College; Hugh Stott, Guy's Hospital; Gravenor Robert Strong, Westminster Hospital; Geoffrey Viner, St. Bartholomew's Hospital; Dora Muriel Watney and Lilian Enid Watney, London (Royal Free Hospital) School of Medicine for Women; and Richard Tudor Williams,† St. Bartholomew's Hospital.

* Distinguished in anatomy. † Distinguished in physiology. ‡ Distinguished in pharmacology.

This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

UNIVERSITY OF CAMBRIDGE.—The late Dr. Perowne has bequeathed to the University his collection of amber from the Norfolk coast.—The Council of the Senate has proposed that the income of the fund bequeathed to the University by the late F. J. Quick shall be applied to the foundation of a Quick professorship of biology with a stipend of about £1000; to the provision of assistance and equipment for the professor's laboratory; and to the furtherance of research in animal and vegetable biology. The professor is, in the first instance, to devote himself to the study of the protozoa, especially of such as cause disease.—The Council has propounded a scheme for the mutual recognition by Cambridge of the matriculation examination of the Universities of Manchester, Liverpool, Leeds, and Sheffield, and by these Universities of the previous, senior local, and higher Oxford and Cambridge examinations.—In view of the changes in the school year favoured by the Board of Education the Local Examinations Syndicate proposes to hold its examinations in July as well as in December.—The Studies and Examinations Syndicate has issued a second report. Recognising that the Senate is not prepared to exempt all candidates from taking the two classical languages in the previous examination, it now proposes that "students in science" should be distinguished from "students in letters," and that the former should not be required to take more than one classical language in the previous or subsequent examinations for a degree. The report, which thus provides that "compulsory Greek" shall not be exacted from students proposing to graduate in such subjects as mathematics, natural science, mechanical science, and economics, is set down for discussion on April 27th and 28th.—The examination in sanitary science for the Diploma in Public Health will begin (Part I.) on April 4th and (Part II.) on April 9th.—Mr. L. A. Borradaile, M.A., is appointed an examiner in elementary biology in the place of Mr. Shipley.—At the Congregation on March 10th the following degrees were conferred:—

M.B. and B.C.—W. H. Hastings, Trinity; and C. Akerman, Gonville and Caius.

M.B. only.—C. E. A. Armitage, Emmanuel.

FOREIGN UNIVERSITY INTELLIGENCE.—*Kieff:* Dr. Lominsky, *privat docent* of Histology and Embryology, has been appointed Extraordinary Professor.—*Königsberg:* Dr. Heine of Berlin has been offered an Extraordinary Professorship of Otology with charge of the Ear Polyclinic.—*Lemberg:* Dr. Kasimir Panek has been recognised as *privat-docent* of Hygiene and Dr. Georg Leopold Modrakowski as *privat-docent* of Pharmacognosis.—*Lyons:* The chair of External Pathology has been abolished and a chair of Clinical Gynæcology has been established to which Dr. Pollosson has been appointed.—*Munich:* Dr. Meinhard Pfaundler of Gratz has been appointed Extraordinary Professor of Children's Diseases in place of Dr. von Ranke, resigned.—*Nancy:* The chair of Pathological Anatomy has been abolished and a chair of Pædiatry established, to which Dr. Haushalter has been appointed.—*Naples:* Dr. Guido Guerrini has been recognised as *privat docent* of General Pathology.—*Odessa:* Dr. Martin Sihle has been recognised as *privat-docent* of Medicine and Therapeutics.—*Padua:* Dr. Ernesto Belmondo, Extraordinary Professor of Psychiatry, has been promoted to the Ordinary Professorship.—*Pavia:* Dr. Giulio Luigi Sacconaghi has been recognised as *privat docent* of Internal Pathology.—*Pisa:* Dr. Antonio Cesari-Demel has been promoted to the Ordinary Professorship of Pathological Anatomy.—*Rome:* Dr Cesare Micheli and Dr. Francesco Mirto have been recognised as *privat-docenten* of Midwifery and Gynæcology.—*Würzburg:* Dr. Straub of Marburg has been appointed to the chair of Pharmacology in place of the late Dr. Kunkel.—*Zürich:* Dr. Silbeschmidt, *privat-docent* of Bacteriology, has been promoted to an Extraordinary Professorship.

LEICESTER AND MILK DEPÔTS.—A conference was held in the town hall, Leicester, on March 1st, between the sanitary committee of the corporation and the medical men of the town to discuss the advisability of establishing a milk depôt for children in the town. Alderman Windley, chairman of the sanitary committee, presided and there was a good attendance. The chairman said that fortunately Leicester was not in a worse condition as regards the death-rate among infants than the majority of the large towns of the country. It had been as high as 210 per 1000 births, but in 1904 it was 161 and last year 146·5 per 1000. Councillor J. T. Biggs said that he had accompanied the chairman on a deputation which visited several towns which had established milk depôts and he felt convinced that a considerable amount of good was effected by the system. Dr. C. K. Millard (medical officer of health of the borough) said that it was a fact that an increasing proportion of mothers in large towns were unable to secrete milk sufficient to suckle their infants and they were driven, therefore, to consider in what way the feeding of infants could be improved. The results from milk depôts had been eminently satisfactory and the idea as to the risk of scurvy was, he thought, pretty much of a bogey. A number of those present took part in the discussion, all being in favour of the suggestion. No formal proposition was, however, put to the meeting.

THE OFFICIAL ORGAN OF THE AMERICAN NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.—The *Journal of the Outdoor Life*, which is published at the Adirondack Cottage Sanatorium, Saranac Lake, New York, and which has just entered upon its third year, has been made the official organ of the National Association for the Study and Prevention of Tuberculosis in America. The *Journal of the Outdoor Life* deals with the outdoor treatment of tuberculosis in an intelligent and scientific manner. It does not advocate self-treatment by the laity or attempt to supplant personal medical advice. It aims to point out the more common pitfalls that beset the unwary health-seeker and to awaken in its readers a healthful interest in an outdoor life. It advocates competent medical supervision, fresh air, nourishing food, and carefully regulated exercise.

UNIVERSITY OF OXFORD.—The hebdomadal council has appointed William Osler, D.M., Hon. D.Sc., F.R.S., student of Christ Church, Regius Professor of Medicine, representative of the University on the council of the Lister Institute of Preventive Medicine in the place of the late Sir John Burdon Sanderson, Bart., D.M., F.R.S., Honorary Fellow of Magdalen College. Professor Osler has also been appointed by the hebdomadal council a member of the committee for appointment of honorary medical officers of the Radcliffe Infirmary, in the place of the late Sir John Burdon Sanderson.

WEST LONDON HOSPITAL.—The board of the hospital has appointed Mr. Leonard A. Bidwell, F.R.C.S., in recognition of his 15 years' work in the out-patient department, full surgeon without waiting for a vacancy.

ENTERIC FEVER ON THE "CORNWALL."—The medical officer of the Port of London has reported a small epidemic of enteric fever on board the training-ship *Cornwall*, moored off Purfleet, and used for the reception of boys from reformatory schools.

FREEMASONRY.—*The Rahere Lodge.*—We are asked to state that it is proposed to form an R.A. Chapter in connexion with the Rahere Lodge, to be open to all St. Bartholomew's Hospital men who are Freemasons, whether they be members of the Rahere Lodge or not. Further particulars can be obtained on application to W. M., 15, Wimpole-street, London, W. The first founders' meeting is fixed for Tuesday, March 27th, at 5.30 P.M., at the above address but the names of those wishing to become founders could be received for two or three weeks later.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Government and Poisons and Pharmacy.

In the course of the last few years statements have been repeatedly made to the effect that a Government Bill dealing with poisons and pharmacy was about to be introduced and some 12 months ago it was definitely announced by Mr. BALFOUR that the Bill had been actually drafted. The exigencies of politics must have made it necessary to give precedence to other matters, but apparently the draft has now been discovered in a pigeon-hole by the new President of the Council, the Earl of CREWE, for this week he has presented the Bill in the House of Lords. It is described simply as the Poisons and Pharmacy Bill. The second reading has been put down for Tuesday, March 20th. From the text of the Bill, which has now been printed, and an official memorandum, it appears that Clause 1 carries into effect the recommendations of the Departmental Committee on the sale of poisonous substances as to what substances should be treated as poisons. It does little more than substitute for the schedule of poisons contained in the Act of 1868 that schedule as amended by Orders in Council made under Section 2 of that Act. The object of Clause 2 is to authorise persons (who are not chemists), if licensed for the purpose by the local authority, to sell sheep dips, weed-killers, and other poisonous substances for use in connexion with agriculture and horticulture. The Departmental Committee made a recommendation to this effect. Clause 3 requires that where a chemist's business is carried on in two or three shops the business shall be conducted by a duly qualified manager in every shop where the chemist does not himself superintend the business. Clause 4 reverses the decision of the court in "The Pharmaceutical Society *v.* The London and Provincial Supply Association" (5 App. Cas. 857). In that case it was decided that the provisions contained in the Act of 1868, prohibiting persons not being qualified chemists from selling poisons, were not applicable to companies. Clause 5 somewhat extends the by-law-making power of the Pharmaceutical Society and Clause 6 places restrictions on the sale of sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, and similar poisons without, however, limiting the class of persons by whom such poisons may be sold.

The Disposal of Sewage.

The Royal Commission on Sewage Disposal has reported to Parliament that the systematic investigation of a number of artificial processes of purifying sewage for the purpose of ascertaining their relative value in different circumstances is still in progress. It is hoped to issue a report on this subject within the next six months. The Commission has not been appointed for any definite time and it is impossible to state when it will be in a position to make a final report.

Tuberculosis.

The work of the Royal Commission on Tuberculosis is to be continued for another year and a slightly decreased vote—£9400 instead of £9540—is about to be asked from the House of Commons. The reference to the Commission is "to inquire with respect to tuberculosis whether the disease in animals and man is the same, whether animals and man can be reciprocally infected with it, and under what conditions, if at all, the transmission of the disease from animals to man takes place."

The Care and Control of the Feeble-minded.

The following is an extract from a letter from the secretary of the Royal Commission on the Care and Control of the Feeble-minded

which has been circulated together with the estimates for the next financial year: "This Commission was appointed by Royal Warrant, dated Sept. 9th, 1904. Up to the end of 1905 38 meetings were held and 130 witnesses examined. Some of the Commissioners have visited America, Holland and Belgium, and various institutions in this country. Medical investigations by specially appointed medical men are being undertaken in various unions in England and Wales which are expected to be completed by the end of March, 1906. The Commissioners propose to visit Scotland and Ireland for the purpose of hearing further evidence and inspecting various institutions, and some of the Commissioners propose to pay a further visit to certain institutions on the continent. The work of the Commission is proceeding as rapidly as possible but it is hardly probable that its labours will be entirely completed before the end of March, 1907." The vote asked for on this occasion is £4306, which is £1414 more than the vote for the year which ends with this month.

Private Members and Pharmacy.

While, of course, the introduction of a Government Bill dealing with poisons and pharmacy will interfere with the prospects of the private Members' Bill on the subject, Mr. WINFREY and his associates have no intention in the meantime, at any rate, to remove their measure from the order paper of the House of Commons. This week they have circulated the text of their proposals along with a memorandum in which they explain their objects to be:—

(*a*) To check the practice of opening and carrying on divers shops for the sale of poisons and to afford adequate protection to persons frequenting the same by providing that every such shop shall be under the *bond-fide* personal conduct and supervision of a duly qualified person; (*b*) to put an end to the abuses at present attending the hawking of poisons and to better regulate the sale of the same by providing that no poison shall be sold except in a shop which shall first have been duly registered; (*c*) to provide for the maintenance of a register of shops where poisons may be sold and also a register of the duly qualified chemists *bond fide* conducting each such shop and to enable the registrar from time to time to make corrections in, and additions to, the same; (*d*) to provide that the compounding of prescriptions shall be in the hands only of persons duly qualified to sell "poisons"; (*e*) to require that companies keeping open shops for the sale of poisons shall have that portion of their business managed by a duly qualified chemist as director; (*f*) to extend to corporate bodies certain of the provisions of the Pharmacy Acts, 1852 and 1868, from which they are at present exempt by reason of the decision of the House of Lords in the case "The Pharmaceutical Society *v.* The London and Provincial Supply Association, Limited," Law Reports, 1880, Appeal Cases, 857; (*g*) to facilitate the examination of persons desiring to qualify as chemists and druggists, and to enable the Pharmaceutical Society to accept certain certificates of kindred bodies in lieu of examination.

Juvenile Smoking.

Dr. MACNAMARA has now introduced his Bill to provide for the prevention of juvenile smoking.

Select Committee on the Butter Trade.

A select committee has been appointed by the Government on the butter trade.

Scotch Medical Officers and the Local Government Board.

On Tuesday 200 medical officers in Scotland petitioned the House of Commons through Mr. CATHCART WASON in favour of an amendment of the Local Government (Scotland) Act which would allow of an appeal to the Local Government Board in the case of dismissal.

HOUSE OF COMMONS.

THURSDAY, MARCH 8TH.

Sanitary Condition of the Lews.

Mr. WEIR asked the Secretary for Scotland whether he was aware that the local authorities in the Island of Lewis were unable to give effect to the provisions of the Public Health (Scotland) Act or take such action as might be necessary to remedy the insanitary state of the townships, as disclosed in the report to the Local Government Board for Scotland on the sanitary condition of the Lews by the Board's medical inspector, Dr. F. Dittmar; and whether the Local Government Board for Scotland had yet considered the desirability of taking over the public health administration of the island.—Mr. SINCLAIR replied: I am aware of the facts. No decision has been arrived at but the matter is under the anxious consideration of the Local Government Board and myself.

Vaccination Prosecution.

Mr. T. F. RICHARDS asked the Secretary of State for the Home Department whether his attention had been called to the case of Mr. Joseph Slack of Harringay, who was summoned before the Highgate bench of magistrates on three separate occasions for refusing to have his child vaccinated, he declaring on each occasion that he held conscientious objections to vaccination; and whether he would take action to compel the authorities to give that relief to conscientious objectors which the Act contemplated and put a stop to repeated prosecutions.—Mr. GLADSTONE answered: My attention has not been called to the case mentioned by the honourable Member. In 1904 a circular was sent to magistrates drawing attention to remarks made by the Lord Chief Justice on the proper interpretation of the section, but as the law stands I have no power to interfere with the discretion given to the justices in the matter of certificates of conscientious objection nor with repeated prosecutions.

MONDAY, MARCH 12TH.

Irish Medical Contracts.

Mr. KENNEDY asked the Chief Secretary for Ireland whether he was aware that the Local Government Board was seeking to compel all the Poor-law unions in Ireland to advertise for contracts for medicines and medical and surgical appliances on March 10th, and in cases where the lowest tender was not accepted the Board now required to be supplied with the reason for non acceptance; and whether this action had his sanction and on what account it was taken.—Mr. BRYCE answered: The Local Government Board has fixed March 10th as the latest day on which tenders for medicine contracts can be lodged throughout Ireland, because if a uniform date were not fixed some firms might withhold their tenders until they had ascertained the terms upon which rival firms were tendering in other unions and this would obviously not be in the interests of the ratepayers. The principle embodied in the Board's regulations requiring guardians to state the reasons for non-acceptance of the lowest tender when they take such a course is the same as that which has received the sanction of Parliament in Section 18 of the Local Government (Ireland) Act, 1902.

Mr. CHARLES DEVLIN asked the Chief Secretary for Ireland whether he was aware that the Local Government Board had written to the Galway board of guardians remonstrating with it because in the matter of medicine contracts the board of guardians thought well only to consider tenders from Irish firms; and whether it was the intention of the Local Government Board to throw obstacles in the way of Irish boards of guardians encouraging Irish manufactures.—Mr. BRYCE answered: The Local Government Board, having become aware that certain boards of guardians had adopted resolutions that medicine contracts should be confined to Irish firms, has recently addressed a circular letter to all boards of guardians in Ireland, pointing out how very detrimental such a restriction would be to the interests of the ratepayers, for whom the guardians act as trustees, and possibly to Irish industry, by provoking action in England unfavourable to Irish tenders for other articles. The circular also pointed out that it is the duty of the Local Government Board to see that no unnecessary charge is placed upon public funds, from which one-half of the expenditure upon medicine contracts is defrayed. It is not, however, the intention of the Local Government Board to place obstacles in the way of the encouragement of Irish manufactures by boards of guardians, so long as they do not neglect the paramount interests of the ratepayers. I may add that the quantity of medicinal drugs actually manufactured in Ireland appears to be small and that a restriction of contracts to Irish firms would not necessarily tend to encourage the industry. Out of nine Irish firms which hold medicine contracts only two are manufacturing druggists; and even these obtain many of their drugs from England.

Experiments upon Dogs.

Mr. GEORGE GREENWOOD asked the Secretary of State for the Home Department whether his attention had been drawn to the return showing the number of experiments performed on living animals during the year 1904, under licences granted under the Act 39 and 40 Vic., c. 77, distinguishing painless from painful experiments; whether the 16 experiments performed by Dr. William Bain and recorded in the return, in some of which septic bacilli were introduced into the interior of the gall-bladders of dogs through wounds two or three inches long, made for that purpose, and in all of which one or more gall-stones were also inserted into the living dogs' gall bladders and left there for periods varying from 14 to 70 days, and in 13 of which a post-mortem examination proved that the gall-bladders were inflamed at the time of death, should not properly have been distinguished as painful; and whether the operations described by Dr Bain as involving the insertion of septic bacilli into wounds in dogs made by himself for that purpose were properly reported in such return as aseptic operations.—Mr. GLADSTONE replied: The answer to the first part of the honourable Member's question is in the affirmative. I am advised that the answer to the second part is that the experiments could not properly be described as painful. Those of the animals which the inspector saw gave no indications of pain and the operator declared that he did not believe that the animals suffered any pain. The symptoms observed in a post-mortem examination did not indicate suffering. As to the third part of the question, I am advised that as the actual operation was performed under aseptic conditions it is properly described as aseptic.

Sale of Quack Medicines.

Mr. MYER asked the Secretary of State for the Home Department whether his attention had been directed to the frauds perpetrated upon the public by the advertising and sale of quack medicines and the consequent loss of money sustained by the public and frequent postponement of proper remedial measures being taken by the sufferers in specific diseases; and whether the Government would take any, and if any what, steps either by the institution of prosecutions for fraud or obtaining money by false pretences or by direct prohibitive legislation to deal with this matter.—Mr GLADSTONE replied: I do not doubt that the advertisement and sale of quack medicines are often the cause of serious mischief, but it is an evil which must be met rather by the spread of education than by legislation or prosecution. The difficulties of proving fraud in such cases are, I fear, almost insuperable. If the honourable Member will refer to the proceedings in the Harness' belts case in 1894 he will understand some of the difficulties I refer to.

TUESDAY, MARCH 13TH.

The Whisky Controversy.

Mr. KILBRIDE asked the Chancellor of the Exchequer whether his attention had been drawn to the convictions against traders in North London for selling patent spirit as whisky, and what action he proposed to take to prevent the repetition of such sales; whether he would in future allow operations to be carried on in Government warehouses in which patent spirit was bottled in bond, described as fine old Scotch whisky, and exported to our colonies.—Mr. MCKENNA, who answered for Mr. Asquith, said: My attention has been called to the convictions. The Excise Duty Acts do not discriminate between pot-still and patent-still spirits and as the duty upon both is the same the Inland Revenue officials, whose functions are confined to the protection of the revenue, have no authority to concern themselves in the matter. I understand that notice of appeal against the decision of the magistrate has been given, so that in any case the matter is still *sub judice*.

The Practice of Vivisection.

Mr. SOARES asked the Secretary of State for the Home Department whether in view of the uneasiness prevailing in the public mind on the practice of vivisection he would advise the Government to grant a Royal Commission to inquire into the whole system.—Mr. GLADSTONE

replied: The present law was based on the report of the Royal Commission of 1876. Since then there have been great changes in medicine and the methods of scientific research. I assent to the view that it is desirable that an inquiry should be held and I will consider what form the inquiry should take.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ATKINS, F. DURNFORD, M.B., B.S. Durh., has been appointed Junior House Surgeon at the Croydon General Hospital.

BLAKISON, ARTHUR ALEXANDER, M.R.C.S., L.S.A., has been appointed Medical Officer of Health of Glastonbury (Somerset) for three years.

BRISCOE, WILLIAM THOMAS, M.D., M.Ch. Dub., has been re-appointed Medical Officer of Health of Chippenham (Wiltshire).

BROWN, R. B., L.R.C.P & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Howden District of the county of York.

BRUNWIN, ALAN DEED, M.B., B.C. Cantab., has been appointed House Surgeon at the Denbighshire Infirmary, Denbigh.

DALBY, AUGUSTUS WILLIAM, L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer of Health for the Frome (Somerset) Rural District Council.

DEARDEN, W. F., L.R.C.P. Lond., M.R.C.S., L.S.A., D.P.H., has been appointed to the office of Medical Officer of Health to the Manchester Port Sanitary Authority.

EDMUNDS, EDGAR F., M.B., B.S. Durh., has been appointed House Surgeon at the Chester General Infirmary.

FAIRBANK, H. A. T., M.S. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Hospital for Sick Children, Great Ormond-street.

FALCONER, FRANCIS W., M.B., Ch.B. Aberd., L.M. Rot. Hos. Dub., has been appointed Junior House Surgeon at the Blackburn and East Lancashire Infirmary.

FLITCROFT, THOMAS E., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Newcastle-on-Tyne Dispensary.

FOREMAN, BERRY JOSEPH, L.R.C.P. & S. Edin., has been appointed House Surgeon at the Rawcliffe Hospital and Dispensary, Chorley, Lancs.

LACK, FREDERICK, F.R.C.S. Eng., L.R.C.P. Lond., has been appointed an Honorary Consulting Surgeon to the Chippenham Cottage Hospital.

LEES, HAROLD C., M.B., B.S. Lond., has been appointed Senior House Surgeon at the Blackburn and East Lancashire Infirmary.

MUNRO, W. E., M.B., M.S. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Burghead District of the county of Elgin.

POTTINGER, J. A., M.B., B.Ch. Edin., has been appointed Senior Resident Medical Officer at the Provincial Hospital, Port Elizabeth, South Africa.

PRICE, D., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Castle Cary District of the county of Somerset.

RANDOLPH, CHARLES, M.R.C.S. Eng., L.R.C.P. & L.M. Edin., has been appointed Medical Officer of Health for the Wellington (Somerset) Rural District.

RUTHERFURD, HENRY, M.B., C.M., F.F.P.S. Glasg., has been appointed Surgeon to the Glasgow Royal Infirmary.

SAWYER, JAMES E. H., M.D. Oxon., M.R.C.P. Lond., has been appointed Physician to Out-patients at the Birmingham and Midland Free Hospital for Sick Children.

STEPHENS, F. N., M.D. Toronto, has been appointed Clinical Assistant to the Chelsea Hospital for Women.

STOLTERFOTH, C. S., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Stokenchurch District of the county of Buckingham.

TERRY, HENRY GEORGE, F.R.C.S. Edin., M.R.C.S., L.S.A., has been appointed an Honorary Consulting Surgeon to the Chippenham Cottage Hospital.

WALLER, ALFRED WHALLEY, L.R.C.P. Lond., M.R.C.S., D.P.H. Cantab., has been appointed Honorary Surgeon to the Stroud (Gloucestershire) General Hospital.

WALLIS, E. WHISHAW, L.D.S. R.C.S. Eng., has been appointed Assistant Dental Surgeon to the Italian Hospital, Queen-square, London.

WATKINS, WILLIAM RICHARD SPENCER, M.B., Ch.B. Edin., has been appointed House Surgeon at the Cardiff Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BEDFORD COUNTY HOSPITAL.—House Physician. Salary £60 per annum, with apartments, board, and washing.

BOLTON INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £100 per annum, with apartments, board, and attendance.

BRISTOL, BRISLINGTON HOUSE PRIVATE ASYLUM.—Assistant Medical Officer, unmarried. Salary £160.

BRISTOL GENERAL HOSPITAL.—Assistant House Physician. Salary £60, with board, residence, &c.

OKWOOD, NEAR WOKING, SURREY COUNTY ASYLUM.—Third Assistant Medical Officer. Salary £120, rising to £150, with board, lodging, laundry, and attendance.

BURLEY-IN-WHARFEDALE, WEST RIDING COUNTY COUNCIL, Scalebor Park.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, attendance, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £80, increasing to £90, with board, residence, and attendance.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Two House Physicians for six months. Salary at rate of £30 per annum, with board, residence, and washing.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £40 per annum, with residence, board, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Casualty Department for six months, renewable. Salary at rate of £100 per annum.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Eight Qualified Clinical Assistants.

FARRINGDON GENERAL DISPENSARY AND LYING-IN CHARITY, 17, Bartlett's-buildings, Holborn, E.C.—Honorary Dental Surgeon.

GERMAN HOSPITAL, Dalston, N.E.—Honorary Anæsthetist.

GLASGOW, ROYAL HOSPITAL FOR SICK CHILDREN.—Resident House Surgeon. Salary at rate of £50 per annum, with board and laundry. Also Assistant at Dispensary for six months. Salary at rate of £100 per annum.

GREAT NORTHERN CENTRAL HOSPITAL.—Senior House Physician, Senior House Surgeon, Junior House Physician, and Two Junior House Surgeons, all for six months. Salary of senior officers at rate of £60 per annum, and of junior officers £30 per annum, with board, lodging, and washing.

HAMPSTEAD GENERAL HOSPITAL.—Resident Medical Officer for six months, renewable. Salary £80 per annum, with board and residence.

HOSPITAL FOR EPILEPSY AND PARALYSIS AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida Vale.—Resident Medical Officer. Salary at rate of £50 a year, with board and washing.

HULL ROYAL INFIRMARY.—House Surgeon, unmarried. Salary 100 guineas per annum, with board and apartments.

ITALIAN HOSPITAL.—Honorary Assistant Surgeon.

KING'S COLLEGE (UNIVERSITY OF LONDON).—Sambrooke Medical Registrar.

KING'S LYNN, WEST NORFOLK AND LYNN HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

LONDON COUNTY ASYLUM, Colney Hatch, New Southgate, N.—Fourth Assistant Medical Officer. Salary £150 per annum, with board, apartments, and washing.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon. Honorarium at rate of £50 per annum.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer. Also Resident Medical Officer at the Convalescent Hospital, Cheadle. Salary in each case £150 per annum, with board and residence.

MARGARET-STREET HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Cavendish-square, W.—Surgeon.

METROPOLITAN BOROUGH OF BATTERSEA.—Appointment of Medical Officer of Health. Salary £600 per annum.

MIDDLESBROUGH, NORTH ORMSBY HOSPITAL.—House Surgeon. Salary £120, with apartments and board.

NATIONAL HOSPITAL FOR THE RELIEF AND CURE OF THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury.—Assistant Surgeon.

NOTTINGHAM, CHILDREN'S HOSPITAL.—House Surgeon, unmarried, for six months. Board, residence, and washing provided.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

QUEEN'S JUBILEE HOSPITAL, Earl's Court, S.W.—Junior House Surgeon for six months. Salary £40, with board, washing, and residence.

ROYAL BERKSHIRE HOSPITAL.—Assistant House Surgeon for six months. Salary £80 per annum, with board, lodging, and washing.

STOKE-UPON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—Senior House Surgeon. Salary £100 per annum, with apartments, board, and washing.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

TAUNTON ISOLATION HOSPITAL.—Medical Attendant. Salary £120 per annum.

VALKENBERG ASYLUM, near Cape Town.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, washing, and lodging.

Births, Marriages, and Deaths.

BIRTHS.

BADCOCK.—On March 11th, at West Hill, Wandsworth, the wife of Ernest Reginald Badcock, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

HOWELL.—On March 12th, at Queen Anne-street, Cavendish-square, W., the wife of Conrad M. Hinds Howell, M.B., M.R.C.P., of a son.

HUGO.—On March 11th, at Woodcote Lodge, Purley, Surrey, the wife of R. M. Hugo, M.D., F.R.C.S.I., of a son.

WOOD.—On March 8th, at Glandore, Turner's Hill, Cheshunt, Herts, the wife of Frank H. Wood, M.R.C.S., L.R.C.P., of a daughter.

DEATHS.

POWELL.—On March 8th, at Bombay, James Herbert Powell, L.R.C.P. & S. Edin., of pneumonia, in his 32nd year.

WILLIAMS.—On March 7th, at Aberenig House, Talgarth, R.S.O., Thomas Edward Williams, F.R.C.S.E., J.P., in his 65th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A RIDICULOUS "ADVICE BUREAU."

WE received recently many letters concerning the comic and insulting scheme of a paper called *Answers* for increasing its circulation by exploiting the medical, legal, and veterinary professions. The scheme is dead and a more discreditable one, as well as a more silly one, was never set in motion by any section of the press. The idea was simple enough and if it had succeeded would, so far as the medical profession is concerned, have resulted in a certain number of medical men robbing themselves and their colleagues for the benefit of the proprietors of *Answers*. Every annual subscriber to *Answers* was, in return for 9s., to receive a book of coupons, on presentation of each of which he was entitled to see a selected lawyer, medical man, dentist, or veterinary surgeon once gratuitously. That was where the subscriber to *Answers* came in; *Answers* came in to the extent of 9s. or some proportion of 9s.; the medical man came in because the introduction to such patients was supposed to be of pecuniary value, although they were to pay no money. Of course, the scheme failed but as far as medical men were concerned it did not fail because there was no money in it—it failed because members of an honourable profession could not become the secret nominees of a paper; they could not have their merits touted among the public at the expense of their colleagues.

As we feel sure that the same proper spirit must prevail among our legal and veterinary brethren as among medical men we hesitate to believe the statements made by the editor of *Answers* in issues of that paper dated March 3rd and March 10th. On March 3rd the editor of *Answers* says: "All who have sent along the 9s. subscription have received the voucher-books, and many hundreds have already taken counsel and advice of the solicitors and doctors in all parts of the kingdom." On March 10th the editor of *Answers*, speaking of "my Advice Bureau" and "what you get for 4s. 9d.," says, "my chief medical and legal advisers are still engaged in appointing professional representatives throughout the kingdom." By March 12th, at any rate, the scheme was a confessed failure owing (we are quoting a letter from the editor of *Answers*) to "the antagonism of a certain section of the legal and medical professions." We cannot reconcile the editorial statements, while the inability of some journalists to understand the responsibilities of the medical profession towards the public was never better illustrated than by this egregious scheme.

POINTS IN INCOME TAX ASSESSMENT.

To the Editors of THE LANCET.

SIRS,—I made a return of income for 1905-06 based on an average of three years ending Dec. 31st, 1904. This is in accordance with the requirements of the Inland Revenue authorities. When the demand note is sent me in January, 1906, they have added to the tax on my own return a demand for 10s. as tax on £10 supposed to have been received for the post of medical officer on the post-office. This post was only given me in August, 1904, and by Dec. 31st, 1904 (the time to which the average of return is made), I had only received 18s. 9d. for part of a quarter. I refuse to pay. The income-tax authorities have no power to levy tax on an average supposed to represent the income for the forthcoming year and then add to that any specific receipts in advance which they may choose. I am not liable to tax until the income has been received. I might have died before the income was received.

There is a further point. They demand tax of 5 per cent. on the full receipts (or estimated receipts) under Schedule E. Whereas I point out to the surveyor these contract fees cannot come under Schedule E but under Schedule D, for large deductions have to be made for ordinary working expenses—drugs, dressings, travelling expenses—and the other deductions properly made for medical practice are allowable.

Attempts have been made on me from time to time to include income from Poor-law and club appointments under Schedule E instead of Schedule D, so as to levy tax without deductions for expenses, but I have always resisted them successfully.

I am, Sirs, yours faithfully,

March 5th, 1906. PHILIPPIDES.

*** The Income-Tax Adjustment Agency, 9-11, Poultry, E.C., writes to us with regard to the above letter: "The amount of the assessment in respect of the fee as medical officer to the Post Office is quite correct, as income of this nature is assessable under Schedule E on the income of the year. An allowance should, however, be made for drugs, dressings, &c., if 'Philippides' has to provide these out of his fee and should be applied for before payment of the duty."—ED. L.

THE N.B. POISON GUARD.

Mr. Haydn Brown, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has sent us a sample and description of a poison guard which consists of a star-shaped collar of metal having stamped upon it the word poison loosely fitted to the neck of the bottle. The advantages claimed for it are: "If you do not see it shine in the dusk you will hear it ring or feel it rattle on touching the bottle. On proceeding to cork the bottle you will be sure to touch the guard. On pulling out the cork you will rattle the guard. If you attempt to pour out of the bottle you will jingle the guard upon the edge of the cup or spoon. If you try to drink from the bottle you will feel the guard." With the exception that the collar hangs loosely on the neck of the bottle there is little difference between this invention and one that we believe is still used by a well-known firm of manufacturing chemists, makers of carbolic acid, while the ringing of a bell and inconvenience to the sense of touch are features of other poison bottles. So many unfortunate accidents occur in the handling of poisons by the public that we welcome any device which may tend to prevent such accidents, but unfortunately no practical means to attain this desirable end have yet been devised except at some pecuniary cost, an objection which is considered by some people to be of more importance than life. In addition to apathy culpable carelessness is another reason for the non-success of the "preventive" poison bottle. Mr. Brown points out in his interesting communication that poison bottles of an unusual form cannot be relied upon because bottles of grotesque shape are used for holding such things as mouth-washes, sauces, spirits, and so on. With this we agree to some extent, but in our opinion the bottle of distinctive shape, which in itself possesses the means of directing attention to its contents, will alone prevent poisoning accidents which are due to apathy and carelessness. Any attachment to a bottle which gives trouble and is easily removed will be removed by many persons at the first opportunity.

IS BARLEY WATER A SUITABLE FOOD FOR INFANTS?

To the Editors of THE LANCET.

SIRS,—The letter of "Curia" in THE LANCET of Feb. 24th, p. 565, is interesting and I strongly emphasise the fact that it is indeed an inconsistency on the part of our profession to decry the employment of any diet containing the least taint of starch for young infants, while at the same time advising and administering cow's milk diluted with barley water for this purpose. It would appear that the teachers of pediatrics in this country are at variance with the avowed opinions of the professors abroad—viz., on the continent of Europe and in America, where eminent authorities agree that provision is made for the digestion of cereals in small quantities at an early period of infant life. For example, Schaffer has found ptyalin in the saliva of the newly born and the researches of Moro, Kerounin, Ballantyne, and other recent investigators emphatically demonstrate the existence of this ferment in the youngest infant. Professor Jacobi, with his wide and long experience, is strongly in favour of the administration of starchy fluids to the youngest infants and the universal custom of general practitioners throughout the civilised world of prescribing barley water and milk with markedly beneficial results goes to prove that a little starch (in the form of barley water) is not in any sense injurious but really always helpful in the digestion of the casein of cow's milk.

The casein of cow's milk is never really altered by mere dilution with water alone; it coagulates into large indigestible masses, while human casein is characterised by the formation of soft and light flocculi much more easily acted on by the gastric juice. Therefore the practical clinical fact remains that milk diluted with barley water is a suitable substitute for breast milk but that cow's milk alone is unsuitable for young infants, but in order to adapt it for such purpose its character must be altered by physical or chemical means. The trend of modern investigation is manifestly in the right track and goes to show that our forefathers who reared up strong men and women on a bread-and-milk infant dietary were not entirely lacking in wisdom.

It would, however, be instructive to gather the opinions of the large body of general practitioners in this country on this important point, for the simple fact that so many really first-rate men hold such divergent views indicates clearly enough how difficult is the problem of infant feeding of the day. I am, Sirs, yours faithfully,

March 5th, 1906. M.R.C.S., L.R.C.P.

A HYGIENIC SPITTOON.

WE have received from Messrs. Branth and Co., 95, Leadenhall-street London, an apparatus called "Colberg's Sanitary Anti-Contagious Spittoon." It is made of cardboard and is stated to be lined with an absorbent disinfecting material. These spittoons are supplied either open or with a perforated cardboard cover and it is intended that after they have been in use for a certain time they should be burnt together with their contents. The price of the spittoon with the perforated cover is 2*d.* and without 1*d.*, so that the price need not be considered in connexion with the destruction of the spittoon. A nickel-plated cover is also provided which, to use the words of the circular, "at once brings the spittoon into keeping with the most dainty furniture." While we have our doubts about this the spittoon is certainly useful.

MODIFICATIONS OF CELLULOID.

As cases of personal injury due to the ignition of combs and other articles made of celluloid are occasionally mentioned in our columns, any method of reducing the inflammability of this useful substance will be of interest. Celluloid, as is well known, is an intimate mechanical mixture of about two parts pyroxylin (nitro-cellulose) and one part camphor. The cellulose, which may be in the form of paper, cotton, or linen, after being treated with a mixture of nitric and sulphuric acids is well washed and then incorporated with the camphor either directly by strong pressure in a hot press or by dissolving the camphor in the least possible quantity of alcohol and sprinkling the solution over a layer of pyroxylin. Several such

layers are afterwards worked between rollers and strongly pressed for more than 24 hours. In a long article on the production of celluloid and similar substances the *Scientific American* of Feb. 17th gives some particulars of various French, German, and Italian modifications of the original constituents by the addition of resins, formol-albumin, casein, or glue. It is said that celluloid consisting of a mixture of camphorated nitro-cellulose with gum arabic and fish-glue is non-inflammable and may be used for the preparation of the films employed in photographic cameras and kinematographs. It is also said that a non-inflammable substitute for celluloid suitable for some purposes may be made with aceto-cellulose.

STROPHANTHUS.

Messrs. Oppenheimer, Son, and Co., Limited, of Queen Victoria-street, London, E.C., announce that they have been favoured by the African Lakes Corporation, Limited, with the exclusive handling of the Strophanthus Kombe seeds shipped by them from Africa. The seeds, it is said, are collected under the direction of botanists, so that there shall be no doubt of their identity. This is a step of considerable importance, as it appears that the collection of the seeds has been indiscriminately done, with the result that mixed seeds have reached the market. Strophanthus is a very powerful drug and it is very desirable that the raw material should be a genuine and, so far as possible, a standard article.

THE SERUM TREATMENT OF GRAVES'S DISEASE.

To the Editors of THE LANCET.

SIRS,—Can any of your readers inform me where I can find accounts of the serum treatment of Graves's disease? also where to obtain the serum? I am, Sirs, yours faithfully,

March 13th, 1906. F. G. W.

*** Our correspondent is referred to a lecture in THE LANCET of Nov. 11th, 1905, by Dr. G. R. Murray. In THE LANCET of Feb. 10th of this year, at p. 378, will be found also a summary of a paper on the subject read before the Therapeutical Society by Dr. G. Newton Pitt.—ED. L.

MUCOUS COLITIS AND THE BACILLUS ACIDI LACTICI.

To the Editors of THE LANCET.

SIRS,—Can any of your readers kindly inform me where I can obtain any information in books, or British or foreign medical journals, *re* the treatment of mucous colitis, intestinal putrefaction, &c., by means of lactic acid bacilli administered by the mouth, as advocated by Metchnikoff? Thanking you in anticipation,

I am, Sirs, yours faithfully,

SYDNEY WHITAKER.

Crosby-road North, Waterloo, Liverpool, March 10th, 1906.

DONT'S: FOR MOTHERS AND NURSES.

UNDER the above heading we have received a set of six picture postcards published by Messrs. Reynolds and Branson of Leeds. They illustrate in a humorous way methods of treatment of infants which should most certainly be avoided with reference to perambulators, feeding, carelessness in bathing, and the like. They are sold in sets of six at the price of 6*d.*, and they might usefully be distributed by district visitors and others.

THE ADMINISTRATION OF ANÆSTHETICS FOR UNQUALIFIED DENTISTS.

To the Editors of THE LANCET.

SIRS,—Referring to your answer to "D.P.H." *re* the giving of anæsthetics by medical men for unqualified dentists in your issue of March 3rd, I should like to draw his attention to the following extract from a circular issued by the Medical Council: "Any registered medical practitioner who knowingly and wilfully assists a person who is not registered as a dentist, in performing any operation in dental surgery, either by administering anæsthetics or otherwise, will be liable on proof of the facts to be dealt with by the General Medical Council as having been guilty of infamous conduct in a professional respect." I am, Sirs, yours faithfully,

Taunton, March 14th, 1906. ALFRED KENDRICK.

ADIPOSIS DOLOROSA (DERCUM'S DISEASE).

To the Editors of THE LANCET.

SIRS,—I want references to the literature of the above subject. Can any of your readers kindly help me to attain my object? Thanking you and them in advance, I am, Sirs, yours faithfully,

March 13th, 1906. I. S. M.

L. E.—1. A qualified dentist should not be the servant to a company such as our correspondent describes and the General Medical Council would probably take a very serious view of his conduct if information were laid before it. 2. This is a disputed point but wherever this can be done removal from the official register leads to removal from the roll of diplomates. In the latter case, of course, the now unqualified practitioner cannot use a diploma which he has lost. 3. We do not approve of such private institutions being called "hospitals" or "dispensaries," but we doubt whether the General Medical Council would consider the action of the practitioner "an infamous one in a professional respect."

Ariel.—We do not know of any case in which tetanus antitoxin has been accused of causing the disease. The desiccated serum is, we believe, dried in vacuo without heat, so that it is not sterilised and therefore it might contain living bacilli if it came from a horse sufferin from tetanus. But as the antitoxin has almost certainly some prophylactic effect, it would be unlikely that tetanus would develop unless the dose of bacilli were very large. The antitoxin is, of course, prepared by injecting filtered cultures, not bacilli, so there is no reason for any special risk.

F. H.—We sympathise, but because some people have done wrong in one district we must not condone similar wrong-doing by other people in another district. We could not publish our correspondent's former letter as such statements should be over the signature of their author.

Perplexed.—We think that our correspondent did right to withdraw his name. The method of securing publicity is not a proper one and it is regrettable that his colleagues have not pursued the same course.

Pecunia.—We regret to say that our correspondent received the legal fee.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (3 P.M.).

TUESDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.).

WEDNESDAY (21st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.).

THURSDAY (22nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.).

FRIDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), St. Mark's (2.30 P.M.).

SATURDAY (24th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (19th).—SOCIETY OF ARTS (John-street, Adelphi, W.C.)—8 P.M. Cantor Lecture:—Prof. V. B. Lewes: Fire, Fire Risks, and Fire Extinction. (Lecture II.)

TUESDAY (20th).—PATHOLOGICAL SOCIETY OF LONDON (Royal Army Medical College, Examination Hall, Victoria Embankment, W.C.)—5 P.M. Papers:—Lieut.-Col. C. Birt, R.A.M.C.: Dysentery in South Africa.—Captain W. S. Harrison, R.A.M.C.: On the Phagocytosis of Bacillus Typhosus.—Lieut.-Col. W. B. Leishman, R.A.M.C.: (1) A Simplified Method of Enumerating Leucocytes; (2) Demonstration of the Undulating Membrane of Spirochetæ.

CHELSEA CLINICAL SOCIETY (Chelsea Dispensary, Manor-street, Kings road, S.W.).—8.30 P.M. Annual Clinical Debate: Serum Therapy. Dr. F. F. Calger, Dr. B. Abrahams, and Dr. A. Macfadyen will take part in the discussion.

WEDNESDAY (21st).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Papers:—Mr. C. F. Rousselet: A Contribution to our Knowledge of the Rotifera of South Africa.—Mr. E. M. Nelson: On the Resolving Limits for the Telescope and the Microscope.

THURSDAY (22nd).—CHILDHOOD SOCIETY AND THE BRITISH CHILD-STUDY ASSOCIATION (Parkes Museum, Margaret-street, W.).—8 P.M. Lecture:—Mr. J. C. Medd: Proportion in Education. (Arranged by the British Child-Study Association.)

HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road, W.).—8.30 P.M. Harveian Lecture:—Dr. J. S. R. Russell: Myelitidis (illustrated by lantern slides).

FRIDAY (23rd).—CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Clinical Evening for the Exhibition of Clinical Cases. Patients in attendance from 8 P.M. to 9 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (19th).—ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 P.M. Arris and Gale Lecture:—Mr. J. H. Watson: The Viscosity of the Blood.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. G. Little: Clinique. (Skin.) 5.15 P.M. Lecture:—Dr. T. D. Savill: The Vaso-motor Element in Skin Diseases as a Guide to Diagnosis and Treatment.

POST GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon. Dr. H. Wright: Pathological Demonstration. 2.15 P.M. Medical and Surgical Clinics. 3 P.M. Mr. Paget: Demonstration in Surgical Wards. 5 P.M. Dr. Ball: Middle-Ear Suppuration and its Treatment (with lantern slides).

TUESDAY (20th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Goulstonian Lecture:—Dr. H. B. Shaw: Auto-intoxication.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. G. Rankin: Clinique. (Medical.) 5.15 P.M. Lecture:—Dr. H. D. Rolleston: The True Interpretation of Certain Clinical Manifestations often Ascribed to Liver.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.15 P.M. Medical and Surgical Clinics. 5 P.M. Dr. R. Jones: The Legal Aspect of Insanity.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Clinical Lecture:—Dr. F. Buzzard: Disseminated Sclerosis.

NORTH-EAST LONDON POST GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture:—Dr. G. P. Chappel: Clinical Medicine.

WEDNESDAY (21st).—ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 P.M. Arris and Gale Lecture:—Mr. J. H. Watson: The Viscosity of the Blood.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. H. L. Barnard: Clinique. (Surgical.) 5.15 P.M. Lecture:—Dr. R. Jones: Evolution in the Treatment of Mental Diseases.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.15 P.M. Medical and Surgical Clinics. 4.15 P.M. Dr. Bedford: Demonstration in Medical Wards. 5 P.M. Mr. Bidwell: Plaster-of-Paris Splints. (Lecture I.)

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration:—Dr. D. Grant: Larynx.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Lecture:—Dr. A. Latham: The Selection of Cases for Sanatorium Treatment.

UNIVERSITY COLLEGE HOSPITAL (Gower-street, W.C.).—4 P.M. Clinical Lecture:—Dr. H. R. Spencer: Ovarian Tumours complicating Pregnancy and Labour.

THURSDAY (22nd).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Lumleian Lecture:—Dr. D. Ferrier: On Tabes Dorsalis.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Lecture:—Dr. C. R. Box: Congenital Diseases of the Heart.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.15 P.M. Medical and Surgical Clinics. 3 P.M. Dr. Hood: Demonstration in Medical Wards. 5 P.M. Mr. Baldwin: Practical Surgery.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M. Dr. M. Dockrell: Ul-erythema: I., Centrifugum; II., Telangiectic; III., Aphyogenes. (Chesterfield Lecture.)

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture:—Dr. A. J. Whiting: Aortic Valvular Disease. (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Dr. Garrod: Pyloric Obstruction in Infants.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Mr. J. Cantlie: Observations on the Part played by the Sigmoid Flexure in Health and Disease.

FRIDAY (23rd).—ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 P.M. Arris and Gale Lecture:—Mr. S. W. Curl: The Arterial Pulse, its Physiology and Pathology.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. D. Grant: Clinique. (Ear.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.). 2.15 P.M. Medical and Surgical Clinics. 5 P.M. Dr. S. Taylor: Chlorosis.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1905, which was completed with the issue of Dec. 30th, were given in THE LANCET of Jan. 6th, 1906.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1905 are now ready. Bound in cloth, gilt lettered, price 1*l*s., carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s*., by post 2*s*. 3*d*.

To be obtained on application to the Manager, accompanied by remittance.

THE LANCET AT THE RAILWAY BOOKSTALLS.

READERS who usually obtain their copies of THE LANCET at the bookstalls on the Great Western, the London and North Western, and the minor systems in connexion with these railways, are requested to communicate with the Manager, 423, Strand, London, W.C., if they experience any difficulty in getting copies of THE LANCET at these bookstalls.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 15th, 1906.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. in Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 9	29·82	W.	0·11	69	50	42	41	44	Fine
,, 10	30·03	S.W.	...	60	47	39	39	41	Overcast
,, 11	29·72	S.W.	0·13	86	54	41	43	44	Cloudy
,, 12	29·30	N.W.	0·23	67	42	37	36	40	Cloudy
,, 13	29·85	N.	0·05	63	40	30	31	32	Snowing
,, 14	29·89	N.E.	0·03	66	51	30	33	35	Overcast
,, 15	29·91	S.W.	0·03	73	55	35	49	31	Overcast

During the week marked copies of the following newspapers have been received: *Rotherham Advertiser, Dundee Advertiser, Daily Express, Lancashire Post, Sunday Sun, Plymouth Eastern Morning News, Bath Herald, Hereford Times, Broad Arrow, Sheffield Telegraph, Temperance Chronicle, Engineer, Notts Evening Post, Reading Standard, Leigh Journal, Bradford Observer, Budget, Glasgow News, Star, York Herald, Notts Express, Globe, Aberdeen Free Press, Hemel Hempstead Gazette, Warwick Advertiser, Bath Argus, Cambridge Chronicle, Scotsman, Wolverhampton Counties Express, &c.*

Communications, Letters, &c., have been received from—

A.—Messrs. Armour and Co., Lond.; American Laryngological, Rhinological, and Otological Society, New York, Secretary of; Army Medical Service, Director-General of; Anti-opium Societies, Representative Board of the, Bromley, Chairman of; Anti Bearing-Rein Association, Lond.

B.—Dr. E. Battiscombe, Lond.; Dr. Edmund C. Bevers, Oxford; Messrs. Bailey and Son, Lond.; *Bryant Press*, Toronto; Dr. R. Browne-Carthew, Biarritz; Messrs. Bates, Hendy, and Co., Lond.; Mr. S. H. Benson, Lond.; Mr. W. G. Burcombe, Lond.; Messrs. Branth and Co., Lond.; Bedford County Hospital, Secretary of; Brin's Oxygen Co., Lond.; Miss A. D. Brookes, Lond.; Mr. F. A. Brockhaus, Lond.; T. B. Browne, Ltd., Lond.; Dr. James Burnet, Edinburgh; Dr. J. Stoddart Barr, Glasgow; Mr. Richard Bell, M.P., Lond.; Dr. H. Reginald Burpith, Llanarthney, Newport; Professor Miguel Bombarda, Lisbon; Dr. H. Farquhar Buzzard, Lond.; Mr. F. R. Bessant, Westgate-on-Sea; Bristol General Hospital, Secretary of; Messrs. W. H. Bailey and Son, Lond.; Messrs. P. Blakiston's Son and Co., Philadelphia; Mr. Haydn Brown, Caterham.

C.—Sir Henry Craik, M.P., Lond.; Mr. M. J. Chevers, Withington; Canary Islands Agency, Lond.; Dr. William Collier, Oxford; Dr. J. Cantazucino, Bucharest; Mr. Kenneth Campbell, Lond.; Messrs. J. A. Carveth and Co., Toronto; Messrs. Chandler, Ingram, and Bell, Toronto; Messrs. Cleaver and Gerahty, Lond.; C. H.; Cotswold Sanatorium, Gloucester, Secretary of; Dr. J. H. Chesnutt, Baltimore; Messrs. Chivers and Sons, Histon; Messrs. Cordingley and Co., Lond.; Messrs. J. and A. Churchill, Lond.

D.—Messrs. H. Delaine and Co., Paris; Mr. T. Dixon, Lond.; Dundee District Asylum, Resident Medical Officer of; Messrs. J. Defries and Sons, Lond.; Mr. John Q. Donald, Colinsburgh.

E.—Mr. E. Evans, Stroud.

F.—Mr. G. Fock, Leipzig; Messrs. Fairchild Bros. and Foster, Lond.; F. W. M.

G.—Mr. H. M. W. Gray, Aberdeen; Glen Distillery, Ltd., Glasgow; Messrs. W. Greer and Co., Glasgow; German Hospital, Lond., Secretary of; Dr. Alfred Greenwood, Blackburn.

H.—Dr. W. Bertram Hill, Leeds; Dr. William Hunter, Hong-Kong; Miss Francis Hardy, Lond.; Mr. J. Hall-Edwards, Birmingham; Messrs. Heal and Son, Lond.; Messrs. Hedley and Co., Leytonstone; Major E. A. W. Hall, I.M.S., Sylhet; Messrs. Hirschfeld Bros., Lond.; Dr. George S. S. Hirst, Turks Island, British West Indies; Mr. T. Harling, Blackburn; Messrs. Hunter and Co., Nottingham; Dr. James Hinshelwood, Glasgow; Surgeon-Lieutenant-Colonel J. A. Howell, I.M.S., Munslow; *The Hospital Gazette*, Lond., Editor of.

J.—*Journal of the Outdoor Life*, Trudeau, N.Y.

K.—Mr. R. C. B. Kerin, Lond.; Kasr el Ainy Hospital, Cairo, Superintendent of; Dr. E. Klein, Lond.; Mr. D. Kerr, Manchester; Messrs. Kelly and Co., Lond.; Dr. A. Kinghorn, Liverpool; Messrs. R. A. Knight and Co., Lond.; Kreochyle Co., Lond.; Mr. A. Stoddart Kennedy, Lond.; Mr. Alfred Kendrick, Taunton.

L.—Mr. H. K. Lewis, Lond.; Dr. David Lawson, Banchory; Messrs. Leveson and Sons, Lond.; Mr. H. H. Lacy, Warwick; Dr. T. D. Duke, Edinburgh; Messrs. Lee and Nightingale, Liverpool; Longstreths, Ltd., Lond.; The League of Mercy, Lond.; Dr. J. C. G. Ledingham, Lond.; Dr. Ernst Löwenstein, Belzig bei Berlin.

M.—Mr. B. Marshall, Barnsley; Mr. F. A. H. Michod, Longreach; Maltine Manufacturing Co., Lond.; Mr. J. Murray, Lond.; Manchester Medical Agency, Secretary of; Mr. E. Merck, Lond.; Dr. C. Mercier, Catford; Colonel W. G. Maxwell, Nice; Manchester Royal Infirmary, Secretary of; *Man*; Malthusian League, Lond., President and Council of the; Dr. Duncan Macartney, Glasgow; Mr. D. Mathieson, Edinburgh; Dr. A. Mantle, Halifax; Dr. Harold Mowat, Castle Douglas; Dr. D. M. MacLeod, Outwood; Dr. C. Muthu, Wells.

N.—Messrs. F. Newman and Blunt, Lond.; National Provident Institution, Lond., Secretary of; Nottingham Children's Hospital, Secretary of; Mr. H. Needes, Lond.; Mr. J. C. Needes, Lond.

O.—Odol Chemical Works, Lond.; O'Gorman Agency, New York.

P.—Mr. G. H. Pinder, Broughton; Mr. Y. J. Pentland, Edinburgh; Dr. T. F. Pelley, Rangoon; Dr. F. Cecil H. Piggott, Teignmouth; Dr. G. Steele Perkins, Lond.; Captain J. R. P. Purchas, Lond.; Poole Rural District, Medical Officer of Health of.

Q.—Queensland, Government Statistician of.

R.—Mr. Fred. Reynolds, Leeds; Dr. William H. Ransom, Nottingham; Royal Institute of Painters in Water Colours, Lond.; Royal College of Surgeons, Lond., Secretary of; Dr. J. C. S. Rashleigh, Okehampton; Royal Meteorological Society, Lond.; Dr. Nathan Raw, Liverpool; Dr. W. E. Robinson, Sonning.

S.—Dr. E. B. Sherlock, Sutton; Messrs. J. Smith and Co., Lond.; Messrs. Scott and Co., Paris; Dr. R. H. Sturgeon, Iron River, U.S.A.; Mr. C. Stonham, Lond.; Messrs. G. Street and Co., Lond.; Messrs. Squire and Sons, Lond.; Dr. T. Shennan, Edinburgh; Mr. J. E. Scott, Bramley; Mr. A. E. Shepherd, Doncaster; Mr. A. de St. Dalmas; Scholastic, Clerical, &c., Association, Lond.

T.—Dr. A. S. Torian, Sing; Taunton and Somerset Hospital, Secretary of; Mr. H. Tindale, Lond.; Mr. R. B. Turner, Lond.

U.—United Berlin-Frankfort India-rubber Co., Lond.; United States Expert Association, New York.

W.—Dr. R. Prosser White, Wigan; Mr. Francis H. Welch, Lond.; Mr. G. V. Williams, Berlin; Mr. Sydney Whitaker, Liverpool; Mr. John H. Watson, Birmingham; Mr. W. Wilkinson, Bishop Auckland; Messrs. H. Wilson and Son, Lond.; Messrs. W. Wood and Co., Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Ashwood House, Kingswinford, Medical Superintendent of; Apollinaris Co., Lond.; Addenbrooke's Hospital, Cambridge, Secretary of; A. B. W.; A. L.; A. C.; A. B. S.

B.—Mr. P. Benham, Lond.; Mr. A. J. Bulger, Wolverhampton; Bradford Incorporated Nurses' Institution, Secretary of; Miss Bretherton, Lond.; Brook Hospital, Woolwich, Assistant Medical Officer of; Messrs. Burton, Goldsmith, and Co., Lond.; Messrs. Buchner, Schacht, and Co., Lond.; Beech Hurst, Hanley; Dr. R. K. Brown, Lond.

C.—Mr. G. E. Cotter, Lond.; Cambridge Typewriting Agency, Lond.; C. C. P.; C. M. S.; Messrs. Samson Clark and Co., Lond.; Mr. F. W. Clarke, Chorlton-cum-Hardy; Mr. E. Castoldi, Brescia.

D.—Mrs. Nickolls Dunn, Lond.; Devon County Asylum, Exeter, Secretary of; Doctor, Edinburgh.

E.—Mr. E. Elsmere, Leominster; Messrs. Elgood and Co., Lond.; Mr. J. Evans, Bilston.

F.—Mr. F. P. Flood, Cefn-Coed; F. H. L.; Messrs. R. D. and J. B. Fraser, Ipswich; F. M.; Mr. W. T. Furnival, Stone.

G.—Mr. H. J. Glaisher, Lond.; Mr. L. P. Gordon, Edmonton; Mr. F. Grubb, Lond.; G. A., Westminster.

H.—Mr. C. B. Humphrys, Blandford; Dr. M. Hunter, Ferryhill; Messrs. Hardy and Co., Manchester; Miss Hall, Salisbury; Messrs. J. Haddon and Co., Lond.; Lieutenant A. H. Hayes, R.A.M.C., Umballa, India; Mr. E. Huxley, Lond.; H. C. C.; Messrs. A. Heywood and Son, Manchester; Mr. R. J. Howard, Lond.

I.—Miss Inge, Haslemere.

J.—Mr. W. Judd, Lond.; J. M. K.; J. H.; Lond.; J. V.; J. H.; J. N.; J. J. H.

K.—Mr. M. W. Kelly, Wexford; Messrs. C. Knight and Co., Lond.

L.—Leeds Public Dispensary, Secretary of; Locum, Leicester; Leith Hospital, Secretary of; London Throat Hospital, Secretary of.

M.—Mr. G. S. Menzies, Lond.; Mr. R. Mosse, Berlin; Dr. S. H. Modi, Bombay; Dr. G. Metcalfe, Skelmersdale; Mr. E. Marett, St. Lawrence; Messrs. J. Menzies and Co., Edinburgh; Mr. R. G. A. Moynihan, Leeds; Dr. W. H. Maidlow, Ilminster; Messrs. J. Menzies and Co., Glasgow; Messrs. Middleton and Cracknell, Lond.; Mr. W. Morgan, Lond.

N.—Mr. J. E. Newby, Wadenhoe; North Staffordshire Infirmary, Hartshill, Secretary of.

O.—Mr. J. O'Leary, Bromley; Miss O'Neill, Lond.

P.—Dr. J. C. Pounden, Alfreton; Mr. C. E. Proctor, Robin Hood's Bay.

R.—Mr. G. Ravenshear, Lond.; Royal Bar Hospital, Lond., Secretary of; Royal Cornwall Infirmary, Truro, Secretary of; Dr. J. D. Rice, New Eltham.

S.—Mr. W. Scatliff, Brighton; Mr. A. Smith, Fareham; S. W.; Mrs. Skinner, Winchelsea; Mr. J. F. Stevenson, Liversedge; Messrs. Spiers and Pond, Lond.; Mr. W. E. Shorland, Llanawel.

T.—Mrs. E. Tuckwell, Oxford; Mr. E. H. Taylor, Dublin; Mr. J. Thompson, Birmingham; Mr. J. Thin, Edinburgh; Mr. S. Thackray, Kirton Lindsey; Dr. A. H. Thomas, Boroughbridge; Torbay Hospital, Torquay, Secretary of.

U.—United Alkali Co., Liverpool.

V.—Mr. T. G. Vawdrey, Penryn.

W.—Mr. R. Worger, Radstock; Mr. H. Williams, Talgarth; Mrs. Williams, Talgarth; West London Hospital Medical School, Secretary of; Dr. Wood, Douglas; Messrs. Williams and Norgate, Lond.; West Kent General Hospital, Maidstone, Secretary of; Mr. J. F. Walker, Swallowfield; Dr. R. S. Williams, Liverpool; W. G. B.; W. V. G.

Y.—Dr. L. U. Young, Lond.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d. Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 31, Rue Bapts, Asnières, Paris.